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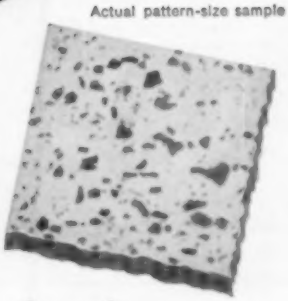

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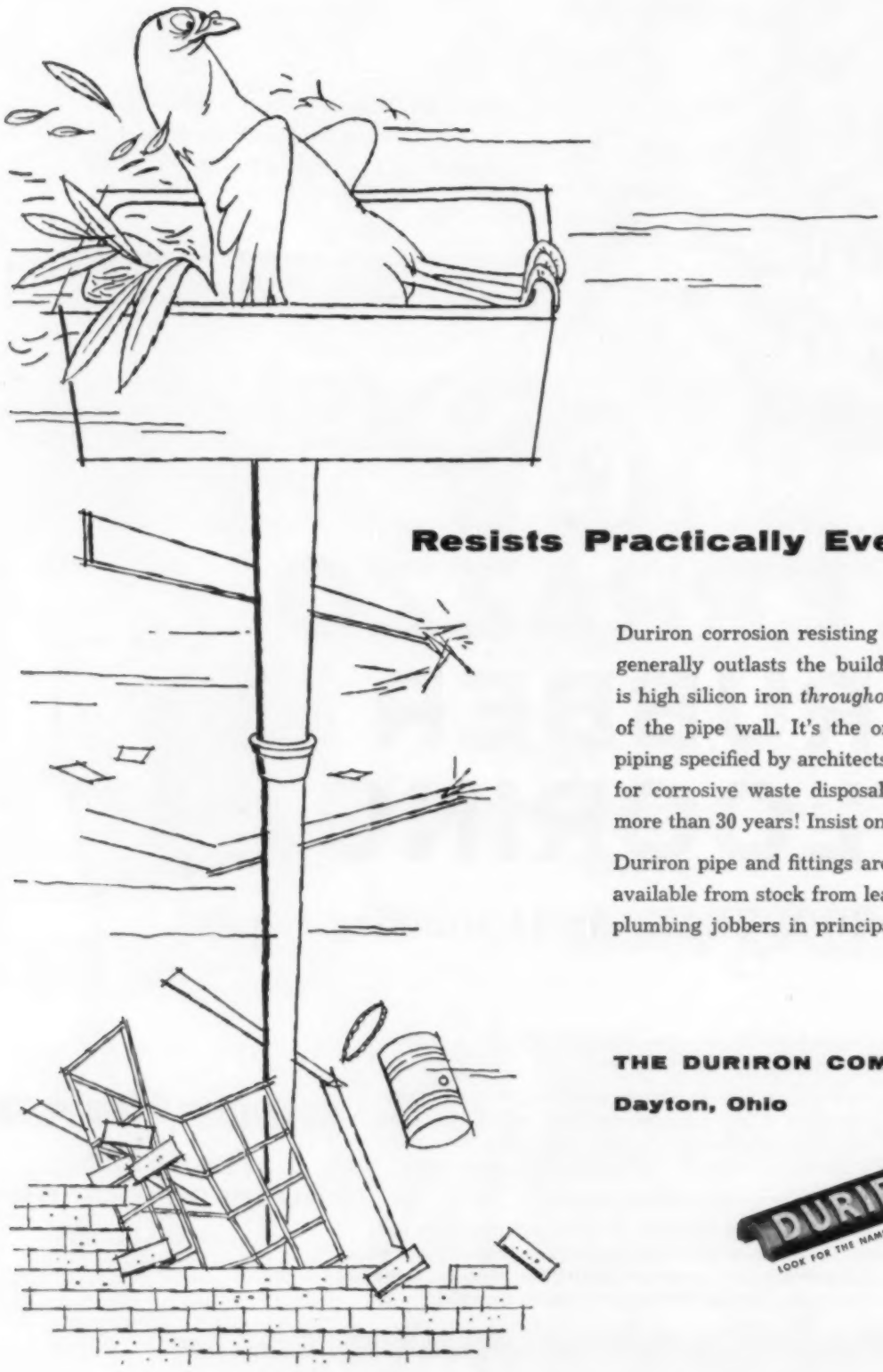

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It's the Law by Bernard Tomson

P/A Office Practice *article discussing measurement of professional compensation through determination of building costs.*

When compensation under a construction contract is to be measured by a determination of costs, disputes are often engendered by terminology which permits of conflicting interpretations. A recent decision of the New York Court of Appeals (*Bethlehem Steel* vs. *Turner Construction Company* and *Mutual Life Insurance Company*) involves a unique situation, but is illustrative of the problems that may arise in this area. Although this case involved the construction of an "escalator" clause contained in a "fixed fee" construction subcontract, the issues involved are pertinent to "cost plus" contracts as well.

In the New York case, the Contractor entered into a subcontract with a steel company for the furnishing, fabrication, and erection of the structural steel for a 20-story office building in New York. The subcontract provided that the Contractor was to pay $182.00 per net ton for the steel, subject to a price adjustment or "escalator" clause. This clause provided:

"The price or prices herein stated are based on prices for component materials, labor rates applicable to the fabrication and erection thereof and freight rates, in effect as of the date of this proposal. If, at any time prior to completion of performance of the work to be performed hereunder, any of said material prices, labor rates and/or freight rates shall be increased or decreased, then in respect of any of said work performed thereafter there shall be a corresponding increase or decrease in the prices herein stated."

The fabrication and erection division of the steel company purchased the steel to be used for the building from the parent company. When, subsequent to the making of the subcontract, the company increased its price for steel to its own erection and fabrication division, as well as to all of its customers, it demanded an increase in its fee under the subcontract as provided by the "escalator" clause. It was established in the litigation that the steel company, prior to the increase in price to its customers, had charged uniform and regular prices to all purchasers, including its own fabrication and erection division.

It was the contention of the Subcontractor that the plain steel which it sold to its own division for fabrication and erection of the structural steel for the office building was a "component material" within the meaning of that term as used in the "escalator" clause. The Contractor and the Owner, however, contended that the term "component materials" referred only to those materials from which the plain steel was produced, and that only an increase in price to the steel company of those raw materials, could justify the application of the "escalator" clause.

The New York Court of Appeals, in a divided opinion, found in favor of the steel company, ruling that the "escalator" clause was unambiguous, and that it clearly provided that an increase in the price of steel which was to be used for fabrication and erection (as distinguished from an increase in the price of raw materials from which the steel was produced), would entitle the Subcontractor to an increase in the subcontract price. The majority opinion was based in part upon the fact that the price-adjustment clause, although referring to an increase in labor rates applicable to the fabrication and erection of the structural steel, did not include any mention of labor costs at the mill. The Court stated:

"The basic issue, then, is the meaning of the term 'prices for component materials' as used in the price adjustment clause of the contract. . . . If 'component materials' means raw materials used in the production of steel, escalation on account of labor rates would not be limited to those specifically mentioned in connection with design, fabrication, and erection, but would have included labor costs at the mill as well. However, it does not. The formula employed referred to the computation of 'prices for component materials, labor rates applicable to the fabrication and erection thereof and freight rates.' A normal and reasonable meaning of that clause has the word 'thereof' referring to the term 'component materials' so that component materials signify the materials that Bethlehem contracted to provide in performing the work 'furnishing, delivering, erecting and painting all structural steel work in accordance with Class 'A' material AISC Code of Standard Practice, ' & c. "

In answer to the argument that the steel company had an unrestricted and unilateral power to increase the prices it was to receive under its subcontract, by increasing its own price for steel, the Court held:

"Appellants argue that unless the escalation clause has the meaning attributed to it by them, Bethlehem has an arbitrary unilateral power to change the price terms of the Bethlehem-Turner contract. In other words, appellants are saying that the contract lacks requisite mutuality and that an escalation clause, in order to be valid, must be based on some extrinsic standard by which escalation can be determined. However, this escalation provided for increases or decreases in accordance with changes in Bethlehem's regular prices to all purchasers of plain steel products and such a provision does not give Bethlehem undue power of determination of the contract price."

The dissenting judges in their opinion, stated that the interpretation urged by the Subcontractor sought "to impress technical and uncommon meanings upon general, every-day words." The minority opinion concluded that the "escalator" clause was ambiguous, and that it was susceptible of the interpretation that "component materials" refers only to the raw materials from which the plain steel was produced. The minority stated:

"As the appellants point out, the usual purpose of an escalation clause is to *preserve*, substantially, the benefit of a bargain. Such a clause is intended to protect against unanticipated or unpredictable changes which might render the bargain unduly harsh. An escalation clause is not ordinarily intended to enable one party to render the bargain more profitable to himself. It seems to me that the words 'prices for component materials' taken in their ordinary meaning can reasonably be understood to refer to the additional prices which Bethlehem would be required to pay in order to obtain and furnish the materials necessary for the performance of the contract work. In other words, those words could reasonably mean that the contract price was to be increased pursuant to the escalation clause, if Bethlehem's costs and expenses increased."

As in all legal relationships, the more skilfully a construction contract is drafted, the more likely that it will be interpreted to reflect the intentions of the parties making it. Under contracts where the rights and liabilities of both parties are dependent upon the calculation of cost, the manner in which this term is described and defined is particularly important.

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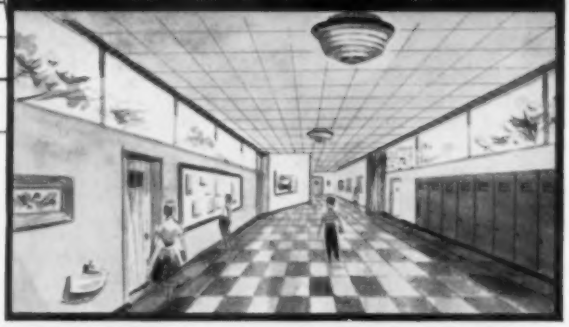

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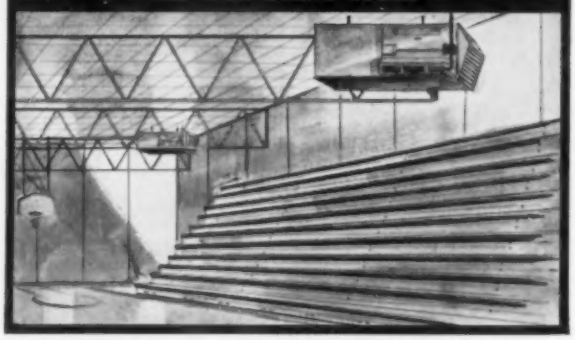

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Mechanical Engineering Critique *by William J. McGuinness*

P/A Office Practice *column on mechanical and electrical design and equipment, devoted this month to the cost and value of air conditioning in commercial buildings.*

In buildings that must produce income, it is quite logical to appraise the value of any added facility with respect to the amount by which the annual operating expenses will be increased. If it is an improvement like air conditioning—which may increase the efficiency of the staff—the savings due to this increase in productivity may well be expected to pay for the cost of installing and operating the new system.

A comprehensive national study of these costs has just been completed by Minneapolis-Honeywell Regulator Company, aided by Carrier Corporation. It shows that a very slight increase in worker efficiency will easily defray the cost of owning and operating an air-conditioning system. The results have been tabulated (*below*).

Line A of the table lists the costs to own and operate an air-conditioning system expressed in dollars per year for each sq ft of floor area. A period of 20 years has been allowed for the amortization of the original cost of the system. The figure of 65¢ for adding this improvement to existing office buildings can be spot checked by an example of the Cunard Building in New York, where tenant rental was increased 57¢[1] per sq ft per yr after air conditioning was added. The basic cost for this improvement in industrial buildings is less because of the simplicity of distribution, despite the fact that the figures include the cost of operating the plant for 10 hrs per day. In the patient areas of hospitals, the cost is greatest because of a more intricate installation and because the plant is operated 24 hrs per day.

In line B other costs are added and totals are given. These totals include payrolls of the staff in each case. Line C expresses the yearly cost of amortizing and operating the air conditioning as a percentage of the total cost, including payroll. The fact that this does not exceed two percent is quite surprising. Finally, line D relates the air-conditioning cost to the cost of the payroll for the business involved. This may be considered the efficiency index. It is obvious that this percentage is the one by which the staff efficiency must be raised to carry out the cost of the improvement. In the case of hospitals it is higher than in other types of buildings because the relative amount of the payroll is less. This is due to the added cost of supplies and equipment. This fact may be one of the contributing reasons why air conditioning has been slower to appear in hospitals. Indeed, it almost appears that air conditioning has been chosen in keeping with its numerical index as listed in Line D, office buildings being most commonly chosen to receive the improvement.

Unfortunately there is no complete, nationwide survey that shows the amount of improvement in productivity resulting from air conditioning. The current report, however, gives a few examples of improved efficiency all of which justify the cost of the air conditioning. In each the percentage is far greater than the minimum listed in the table.

The Detroit Edison Company, after the installation of air conditioning, found that drafting room efficiency improved by 51 percent.

A Federal government study of stenographic work showed a 24 percent improvement with air conditioning.

A manufacturing plant in Tennessee reported a 29 percent increase in productivity after air conditioning.

Benefits to the employe are also seen. A survey of 75 manufacturing plants in New York City revealed a drop of 30 percent in absenteeism after conditioning was adopted.

Each owner must judge the amount by which he feels productivity may be increased by air conditioning. Minneapolis-Honeywell and Carrier have provided us with data to set up an approximate budget for the improvement.

[1]Mechanical Engineering Critique, November 1955 P/A.

costs of owning and operating an air-conditioning system[2]

			Type of building					
			Office		Industrial Air conditioning operates 10 hrs day		Hospital (patient area) Air conditioning operates 24 hrs day	
			New	Existing	New	Existing	New	Existing
A	Cost to own and operate an air-conditioning plant (investment amortized over 20 years).	$	.53	.65	.47	.58	1.16	1.26
B	Other operation costs: supplies and equipment, payroll.	$ $ $	3.03 2.00 66.00 71.56	2.68 2.00 66.00 71.33	1.83 7.05 36.10 45.45	1.29 7.05 36.10 45.02	8.66 26.28 26.04 63.14	8.30 26.33 26.94 62.83
C	Cost of owning and operating an air-conditioning plant as a percent of total yearly expense.	%	.75	.90	1.00	1.30	1.80	2.00
D	Cost of owning and operating an air-conditioning plant as a percent of the payroll.	%	.80	.99	1.30	1.60	4.30	4.70

[2]Costs are per sq ft of building area per year. Table adapted from a report by Minneapolis-Honeywell Regulator Company and Carrier Corporation.

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Architectural Samples Exhibits Now Big Business—Part 1

by Rosalind Cohen

P/A Office Practice ***article reporting the current boom in architectural samples exhibits, and related building-business activities.***

As a result of the tremendous building boom following World War II, more and more enterprises incorporating an "architectural samples exhibit" are appearing on the American scene. From New York to Los Angeles, from Washington, D. C., to Miami, reports have been received, describing super-showrooms, multistory headquarter buildings, and multibuilding construction centers—all of which include samples exhibits as primary or supplemental sources of income.

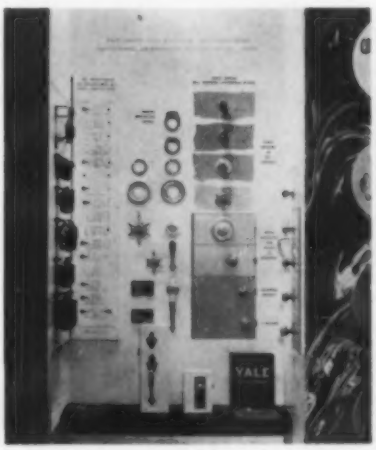
The original venture of this type, in the 101 Park Avenue building, New York, began in 1913 and is now a thriving business enterprise. The prime functions are to show architects and builders the products they can purchase or specify and to provide technical information on these. The newer projects, many still in the conceptual stage, differ from the original mainly in matters of scale, manner of display, and direction of appeal; they offer broader, more elaborate services to the building trade, manufacturing concerns, and consumer; they occupy more space and promise to gain a wider audience. Because the trend indicates an ever-increasing growth of such projects, it seems important to attempt an evaluation of them—both as an architect's tool and as a sound financial endeavor. We find that several of the most extensive projects—each representative of a type—combine with a sample exhibit one or several of the following: offices for architects, engineers, builders, and manufacturers' representatives; meeting halls; information bureau; technical library; consumer service; promotion and publicity department; hotel accommodations.

Our prototype, the Architects Samples Corporation, first displayed samples consisting primarily of basic building materials—ordinarily stored by architects in haphazard fashion. The idea of a centralized, sample location caught on immediately.

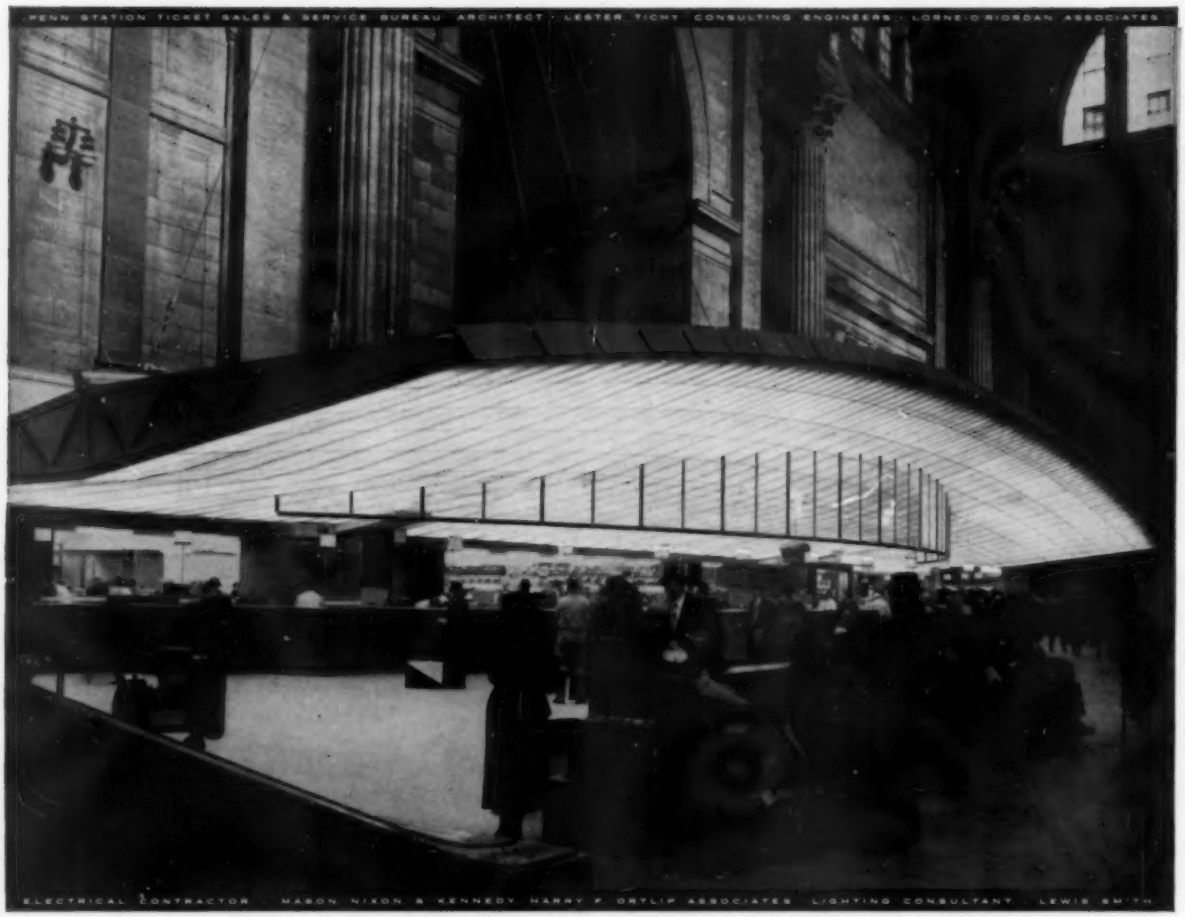
Following World War I, the samples, hitherto filed in cabinets and shelves were gradually shifted to professionally designed displays which included various types of plumbing, heating, lighting, and kitchen equipment, as well as the usual building materials. As the Architects Building at 101 Park Avenue included among its tenants leading architectural, engineering, and contracting firms along with building-material manufacturers, it was not long before similar firms were attracted to the area—in the bustling Grand Central section of Manhattan amid clubs, convention halls, business offices, hotels, and major transportation facilities.

During the Depression, a sufficient number of manufacturers continued their displays because of the prominence that the sample room had gained by then, and absorbed the cost in their national advertising budgets. Hence the ASC survived this period and was well on the way toward enjoying its former success, when World War II started. By that time, other exhibits had appeared in New York, including one sponsored by the Rockefeller interests and maintained at Radio City. That exhibit, along with others, closed at the start of the war due to impending building curtailment. However, the ASC display facilities continued to function for architects and engineers who had transferred from private to military practice.

At present, the ASC exhibit occupies two levels in the Architects Building, covering 25,000 sq ft. The information center is a counter installation maintained by a technically trained staff which handles personal or phoned inquiries and distributes manufacturers' catalogs. Sales representatives are permitted on the floor only by direct appointment with a prospect. The displays themselves must meet a standard set by the organization and are generally the work of professional designers chosen by exhibitors. As the showroom is designed to serve professionals, products are neither installed with lavish accessories (which would attempt to glorify the product), nor arranged in "model rooms" (which would appeal



Information center (left) *is readily accessible at Architects Samples Corporation, New York. The method of display* (right) *is simple and direct.*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primarily to amateur decorators): they are, rather, displayed as individual units and grouped according to type. Income from the showroom is derived through the rental of display space.

According to H. C. Nancken, Executive Vice-President of the firm, ASC has endured for more than 40 years due to several basic factors, foremost of which is its location in New York, where the showroom is frequented by out-of-town visitors as well as local architects who specify products for out-of-town buildings; therefore manufacturers regard this as a national advertising medium. In addition, many manufacturers maintain showrooms or offices in the general vicinity—a factor which facilitates business transactions for the builder.

The most ambitious venture to follow the lead of ASC, is Construction Materials Center, envisioned by Designer Victor M. DiSuvero. If fully realized, the project would become a chain of merchandising-information centers for the building industry, established in 18 of the largest metropolitan areas throughout the nation.

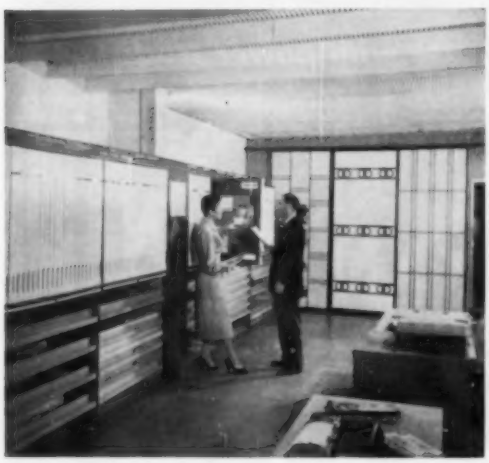
In 1954, a two-year pilot operation was begun in San Francisco. Increased sales by exhibiting manufacturers and an impressive flow of inquiries during the first year encouraged rapid expansion of the original COMAC plan to include office facilities for architects and builders, manufacturers' showrooms, meeting halls, dining rooms, and in some cases, hotel accommodations.

Basically, a COMAC unit will be an information and exhibit center like ASC, organized on a grander scale and aspiring to astronomical importance in merchandising and communication. Its aims are threefold: to facilitate purchase of materials for consumers and professionals alike; to provide a central merchandising facility for the building industry; to effect a means of bridging technological lag between organizations and individuals throughout the country.

The first building of the project, a 12-story structure in San Francisco providing 45,000 sq ft of area per floor, is expected to be completed this year. Products and materials will remain on permanent exhibition in a main display room where a patented display system will permit hundreds of manufacturers to be represented in a bank of panels 70 feet long. Elsewhere, full-scale model kitchen, bathroom, classroom, and other interior exhibits will show equipment and materials installed, integrated, and in actual use. There will also be a gallery area for diagrammatic displays, and a separate exhibit of new products.

An elaborate variety of free services is offered. These include: distribution of specification sheets summarizing all local-level information on products; an architects' service; a consumer service department which helps an architect's client choose materials (this department, we were informed, will work closely with the architect in an attempt to influence the client's attitude toward certain products); a research service to provide comparative abstracts on competitive products; a building-data library. Another featured attraction is the monthly Round-Table Conference, a series of panel discussions bringing together representatives from building trade associations, faculty members from universities, and manufacturers who present new products or technical innovations which serve as basis for discussion. (Summaries of these conferences will be prepared and distributed by COMAC at a nominal fee.) To make the public aware of building developments, a vigorous publicity and promotion department is prepared to use radio, television, and periodicals. Service fees paid by manufacturers participating in the COMAC program will constitute the main source of income for this project, which is otherwise privately financed.

From a business standpoint, the COMAC venture differs radically from that of its New York predecessor. Whereas the latter evolved slowly out of propitious circumstances (i.e., strategic location, vitality of local building industry, support of local manufacturers and distributors), the COMAC project would spring full-blown upon the scene, without the assurance of continuing local patronage. Such a scheme is most feasible during a period of great national prosperity; under stricter economic controls, however, support would depend upon the prosperity of local building industry. As it is, this project-type, aiming to attract any and every audience, is based on statistics, estimations, predictions, and the dream of ever-increasing, limitless building activity as well as ever-expanding prosperity. In addition, such projects exemplify the peculiar American genius for invention of monstrous multipurpose, multifunction devices which are splendid in theory.



Main display room (left) *at Construction Materials Center, San Francisco, features custom-designed display units with samples or data mounted on sliding panels* (right). *Bulky materials are stored in drawers below.*

Jamison announces flexidor*...

NEW flexible batten door

All-neoprene batten door designed for use with power trucks

*Jamison Trademark

Flexidor is light and resilient to absorb and dissipate the shock of impact; reinforced door noses add strength, prevent buckling or wrap around on impact. Free-swinging door suspension provides minimum impact resistance. Jamison two-way gravity cam hinges assure fast closing.

Flexidor is available in a full range of sizes for use in new construction or to replace rigid battens. Complete information is available from the Jamison Cold Storage Door Co., Hagerstown, Md.

JAMISON

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More JAMISON Doors are used by *more* people than any other Cold Storage Door in the world.

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Indexed in Art Index, Architectural Index.

REINHOLD

specifications trade sections prove controversial

Dear Editor: Harold J. Rosen has a good idea, but his trial balloon (page 154, JULY 1957 P/A) fails to meet his own objectives because: (1) it is incomplete; and (2) it is adapted only to the needs of a single Government Agency.

Rosen's Veterans Administration classification does not include *Demolition*, which is an important element of most present-day construction. It also omits *Plumbing*, *Heating*, *Electric Work*, and *Elevators*, which collectively account for approximately one quarter of all building costs. A building might also require open or pressure caissons, spread footings, grade beams, or a full mat foundation, instead of piling.

I am enclosing corresponding specifications classifications used by Public Housing Administration and New York City Housing Authority (both of which are deficient as a *trade standard*, for the same reasons that Rosen's published list is incomplete).

Most people take for granted the standards which contribute so much ease and convenience to modern living, and do not realize that standard railroad widths, standard screw threads, and standard automobile tires (to mention but a few examples) did not always exist, but had to be established by collective trade action, trade agreement, and trade acceptance—exactly as Rosen is now trying to do for his Specifications Classification.

Most people also overlook the standardizing axiom: that a standard, to catch on and succeed, must be tied in with existing trade practice.

The metric system, despite its indisputable functional advantages, is not used in American construction because it was not co-ordinated with the existing American and English practice of building in feet and inches. Decimalization, which is the essence of the metric system, is, however, standard American railroad practice because the foot, instead of a theoretic fraction of the equatorial circumference of the earth (which later, fuller knowledge has proved wrong), was continued as the measuring unit. A railroad construction "station" is 100 ft. Similarly, a "square," the American standard roofing unit, is 100 square ft. A "module," to cite one further example, is 4 inches.

The metric system is, however, standard in the electric industry because electric science evolved after the establishment of the metric system, so that in electrical development the metric system did not have to combat and replace an established competing trade practice.

The three most widely used present building specifications classifications are the AIA and Sleeper classifications, mentioned by Rosen, and *Sweet's Catalog* classification (listed below) which he overlooked. Any proposed specifications classification that hopes to survive must be tied in with these existing established construction folkways.

My only personal contribution to this discussion—for the above comments are a reiteration of information available to any sincere investigator—is that the basis of the specifications classification should be the *normal construction sequence*, so that the classification can also be used for scheduling progress and controlling construction—which are more important than specification format and filing convenience.

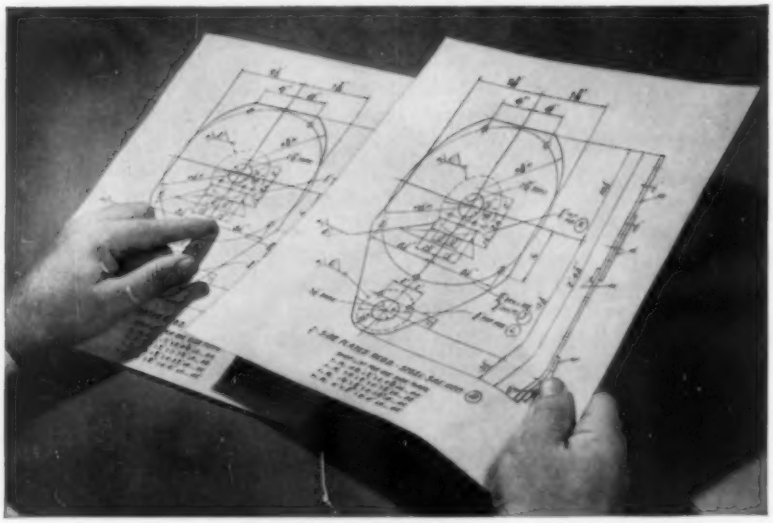
Fortunately, the *normal construction sequence* is the order in which specifications are written and used for estimating, for subcontracting, and for building.

Regardless of the kind, size, or nature of a building the *normal construction sequence* is:

0— Design
0.1 Contracts
0.2 Surveys

(Continued on page 14)

DRAFTING TRENDS



Even a printmaking expert cannot look at these two prints and tell which original drawing was made on Phantom Ruled Blutex. Still, there were hours of difference in drafting time required to make the two identical drawings from which these prints came. Write today for a free sample of Phantom Ruled Blutex and see the proof for yourself.

Phantom ruled vellum leaves more time for creative drafting

Working with scaling aids often takes valuable time from the basic job of creative drafting. Add the wasted hours spent drawing guide lines, lettering and handling similar routine drafting problems, and you have the reasons why POST developed Phantom Ruled Blutex.

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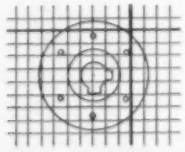
By using the grid lines, a draftsman works quickly to scale without constantly reaching for scaling instruments. Proportioning and resizing are easier and faster. Freehand drawing truly becomes a rapid, highly creative method of recording ideas. Even lettering and dimensioning are transformed into simpler, less time-killing jobs.

In printmaking, the grid lines disappear completely, leaving a sharp, contrasty print.



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ENGINEERING EQUIPMENT & DRAFTING SUPPLIES • FIELD EQUIPMENT & DRAFTING FURNITURE

p/a views

(Continued from page 13)

0.3 Borings and Soil Investigation
0.4 Estimating
0.5 Drawings
0.6 Specifications
Etc.

1— Site Preparation

1.1 Demolition
1.2 Shoring
1.3 Sheet Piling
1.4 Underpinning
1.5 Soil Stabilization
Etc.

2— Excavation, Backfill & Grading

2.1 Preservation of Top Soil
2.2 Rock Excavation

3— Foundations

3.1 Spread Footings
3.2 Timber Piles
3.3 Concrete Piles
3.4 Open Caissons
3.5 Pneumatic Caissons
3.6 Waterproofing
3.7 Dampproofing
3.8 Foundation Drains
Etc.

4— Structural Framework

4.1 Stone
- 4.10 Modern Structural-Stone Supports (Some Bridgework & Bridge Piers—Rare)
- 4.11 Egyptian Stonework (Historical)
- 4.12 Greek & Roman Stonework (Historical)
- 4.13 Romanesque (Historical)
- 4.14 Gothic (Historical)
- 4.15 American Colonial (Historical) (Pennsylvania Dutch and New York Cobblestone Construction)
- Etc.

4.2 Concrete
- 4.21 Plain
- 4.22 Reinforced
- 4.23 Controlled
- 4.24 Air Entrained
- 4.25 Prestressed
- 4.26 Precast Floor and Roof Slabs
- 4.27 Cement-Work and Flooring
  - 4.271 Floor Hardeners
  - 4.272 Hydrolithic Iron Type Waterproofing
- 4.28 Concrete and Cinder Blocks
- 4.29 Concrete and Sand Lime Brick

4.3 Ceramic Bearing Walls and Piers
- 4.31 Common Brick
- 4.32 Face Brick
- 4.33 Fire Brick and Clay
- 4.34 Chimney Construction
- 4.35 Architecural Terra Cotta
- 4.36 Structural Terra Cotta
  - 4.361 Back-up Blocks
  - 4.362 Floor Arches
  - 4.363 Guastavino Arches
- 4.37 Structural Facing Tile
- 4.38 Ceramic Veneer
- 4.39 Mortar

4.4 Structural Steel
- 4.41 Rivet Connected
- 4.42 Bolt Connected
- 4.43 Weld Connected
- 4.44 Lally Columns

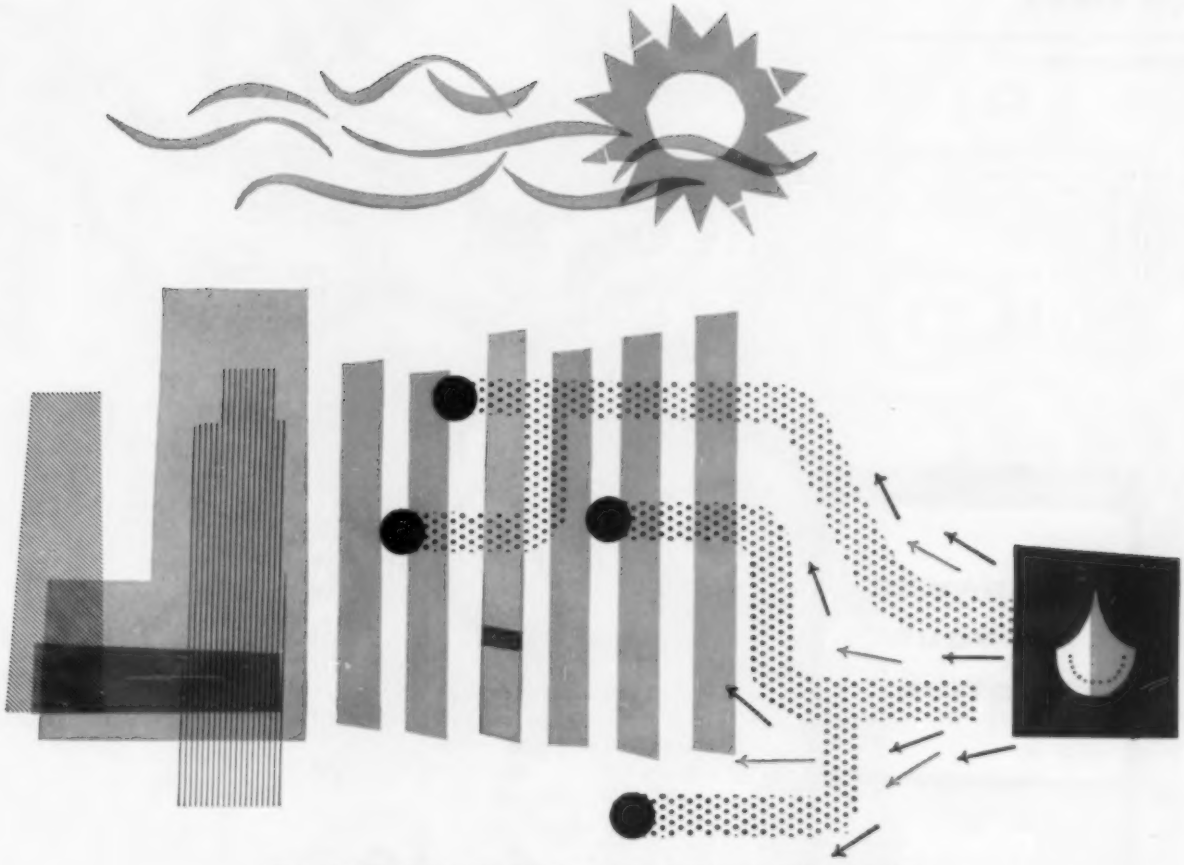
4.5 Steel Joists
4.6 Structural Cast Iron (Now rare, but very important, historically)
4.7 Structural Wood
- 4.71 Small House Construction
  - 4.711 Rough Hardware
- 4.72 Mill Construction
- 4.73 Timber Trusses
- 4.74 Laminated Arches
- 4.75 Honeycomb Arches
- 4.76 Plywood
- 4.77 Wood-Preserving Treatments.

5— Roof Cover (Topping Out)

5.1 Composition Roofing
5.2 Sheet Metal
- 5.20 Skylights and Louvers
- 5.21 Tin
- 5.22 Copper
- 5.23 Lead
- 5.24 Aluminum
- 5.25 Galvanized Iron

5.3 Asphalt Shingles and Siding
5.4 Asbestos Shingles and Siding
5.5 Slate
5.6 Tile
5.7 Wood Shingles
Etc. (Swiss Chalet sod roofs)

(Continued on page 16)



SUPERVISORY DATACENTER*

Starting point for centralized automation in buildings

NEW IDEAS that significantly affect building design are rare—and important. The Supervisory DataCenter control panel perhaps represents such an idea. For by completely centralizing air conditioning control, it shows the way to similar economy and integration of many another mechanical function. Conception, housing and installation of the DataCenter involve creative design factors that are of first concern to the architect. Your local Honeywell man has full details.

*Trademark

Minneapolis-Honeywell Regulator Company

Visualized at right is a DataCenter as it might be integrated into the design of a modern airport terminal. On public display, it oversees comfort, gives the engineer a constant picture of air conditioning system operation, provides major operational economies.
For passengers, the panel might show weather conditions in major cities. A DataCenter similarly displayed is planned for the Queen Elizabeth Hotel, Montreal, Quebec. Architect: G. F. Drummond, Chief Architect, CNR; Engineer, N. S. B. Watson, CNR.

p/a views

(Continued from page 14)

6— Wall Enclosure (Closing In)

6.0 Stone Veneer and Ashlar
- 6.01 Granite
- 6.02 Marble
- 6.03 Limestone
- 6.04 Sandstone
- 6.05 Bluestone
- 6.06 Alberene
- 6.07 Artificial Stone

6.1 Cavity Walls
- 6.10 Design
- 6.11 Back Up Blocks
- 6.12 Anchors and Bonds
- 6.13 Spandrel Waterproofing
- 6.14 Calking

6.2 Curtain Walls
- 6.20 Glass Blocks
- 6.21 Aluminum
- 6.22 Stainless Steel
- 6.23 Porcelain Enamel
- 6.24 Plastics
- 6.25 Heat Insulation
- 6.26 Vapor Seal

6.3 Stucco

6.4 Exterior Wall Boards
- 6.41 Mineral Base
  - 6.411 Gypsum
  - 6.412 Glass
  - 6.413 Mineral Wool
- 6.42 Wood Chip and Vegetable Fiber Base

6.5 Wood Exterior Finish
- 6.51 Shingles
- 6.52 Clap Boards
- 6.53 Novelty Siding
- 6.54 Exterior Millwork
- 6.55 Wood Columns

6.6 Exterior Doors & Door Frames

6.7 Windows
- 6.71 Wood
- 6.72 Steel
- 6.73 Aluminum
- 6.74 Bronze
- 6.75 Weatherstripping

6.8 Glass and Glazing

6.9 Store Fronts

7— Interior Finish and Trim

7.01 Furring, Lathing, and Plastering
- 7.011 Metal Lath
- 7.012 Metal Base
- 7.013 Plastering
- 7.014 Scagliola

7.02 Sound Insulation and Control
7.03 Dry-Wall Finish and Wallboards
7.04 Interior Glass Blocks
7.05 Interior Marble and Stone
7.06 Terrazzo
7.07 Ceramic Tile
7.08 Composition and Plastic Tiles
7.09 Linoleum
7.10 Ornamental Iron, Aluminum, and Bronze
7.11 Metal Stairs and Fire Escapes
7.12 Metal Bucks, Doors and Trim
7.13 Metal Partitions
- 7.131 Toilet Partitions
- 7.132 Office Partitions

7.14 Metal Cabinets and Built-In Furniture
7.15 Wood Stairs
7.16 Wood Finish Floors
7.17 Interior Wood Doors
7.18 Wood Borrowed Lights
7.19 Interior Wood Trim and Paneling
7.20 Wood Cabinets and Built-In Furniture
7.21 Bathroom Accessories
7.22 Finish and/or Builders' Hardware

8— Painting and Decorating

8.0 Paints and Protective Coverings
8.1 Wallpaper
8.2 Fabrics and Hangings
8.3 Shades
8.4 Venetian Blinds
8.5 Carpets
8.6 Movable Furniture

9— Mechanical Equipment

(Co-ordinate All Roughing With Structural Framework)

9.0 Power Plants
9.1 Heating, Ventilating, and Air Conditioning
9.2 Plumbing
9.3 Electrical Work
9.4 Lighting Fixtures
9.5 Kitchen Equipment
9.6 Laundry Equipment
9.7 Incinerators
9.8 Elevators

10— Occupational Equipment

10.0 Domestic
- 10.01 Mail Boxes (usually included in hardware or electric subcontracts)

10.1 School
10.2 Hospital
10.2 Religious
10.4 Theatrical
10.5 Musical
10.6 Office
- 10.61 Mail Chutes
- 10.62 Movable Partitions

10.7 Factory and Industrial

11— Utilities

11.1 Sewers
11.2 Water
11.3 Gas
11.4 Electricity
11.5 Steam (piped steam is available in N. Y.)
11.6 Telephone Service
Etc.

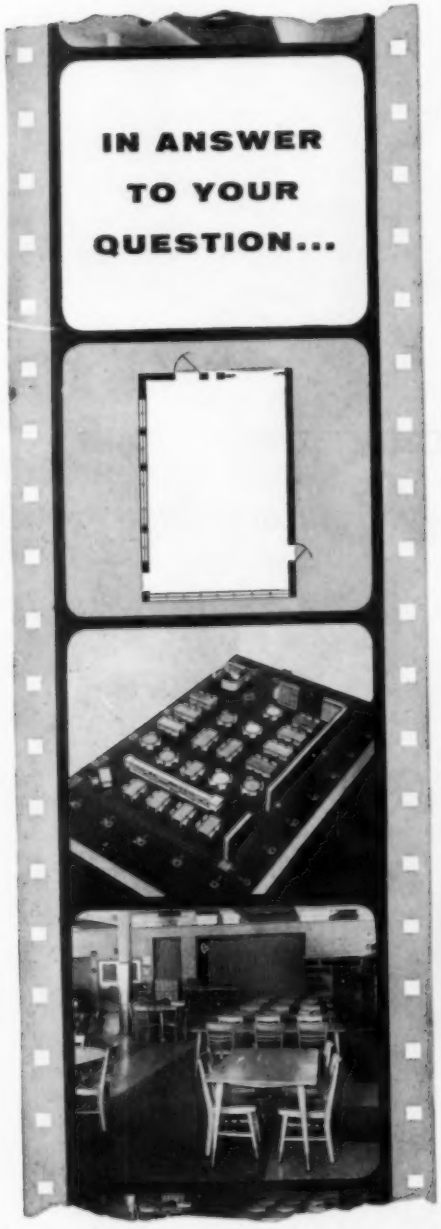
12— Site Improvements

12.0 Grading
12.1 Drainage
12.2 Roads
12.3 Walks
12.4 Fences
12.5 Playground Equipment
12.6 Flag Poles
Etc.

13— Landscaping (Lawns and Planting)

13.0 Design
13.1 Grass, Lawns, and Playing Fields
13.2 Plants
13.3 Vines
13.4 Shrubs
13.5 Trees
- 13.51 Tree Moving

(Continued on page 22)



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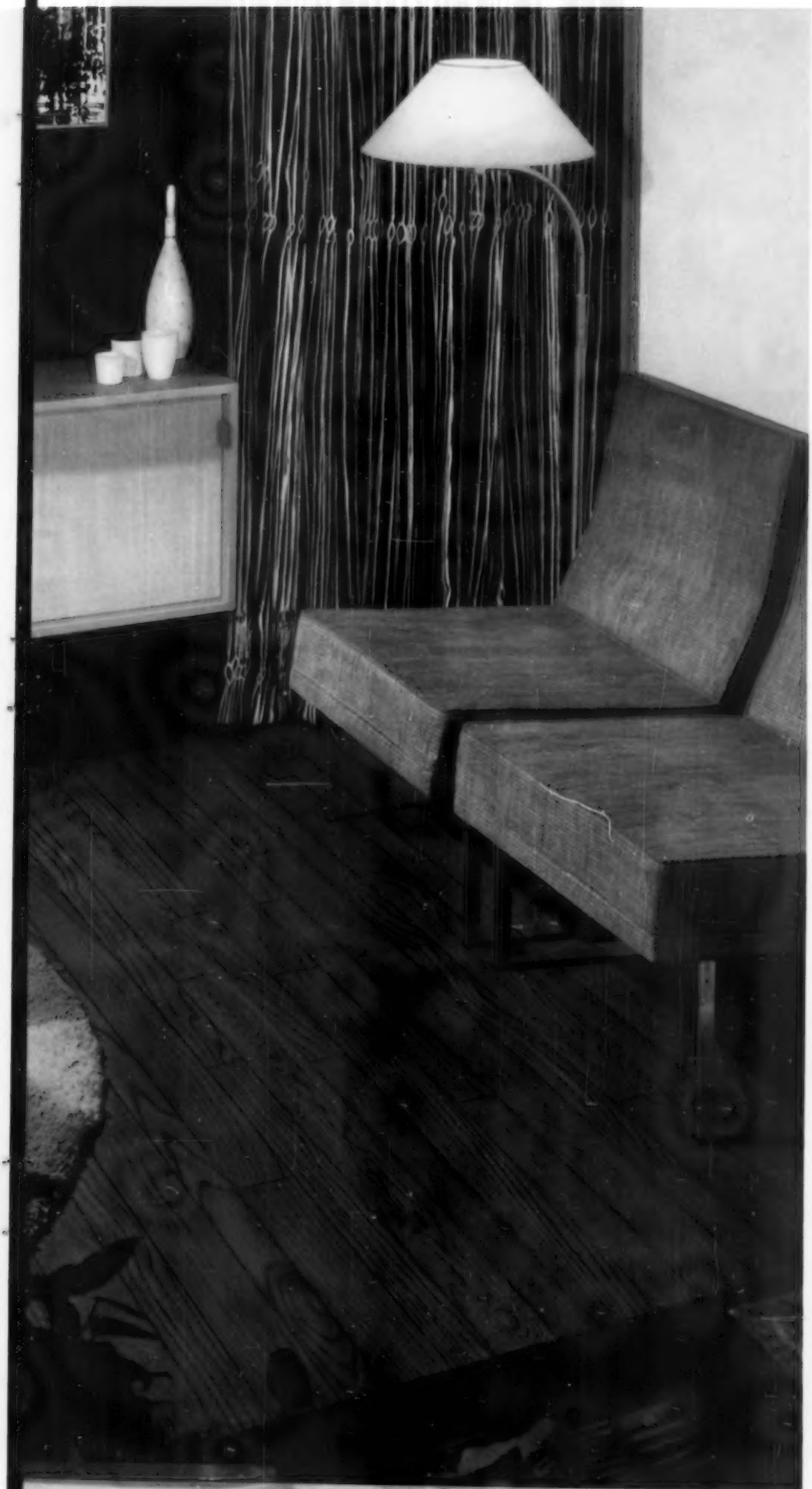

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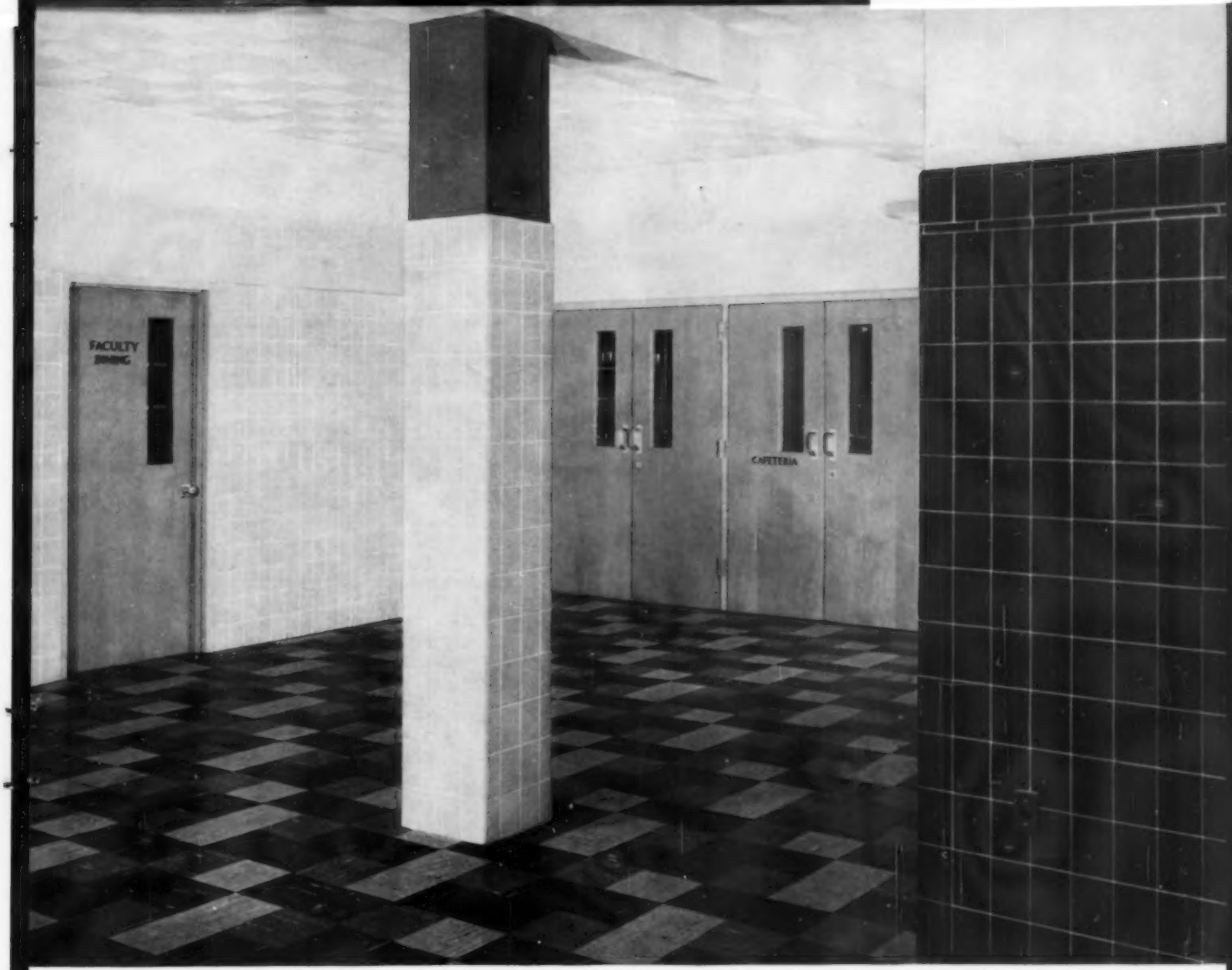

Corridor in North Penn High School. Howell Lewis Shay and Associates, Architects.

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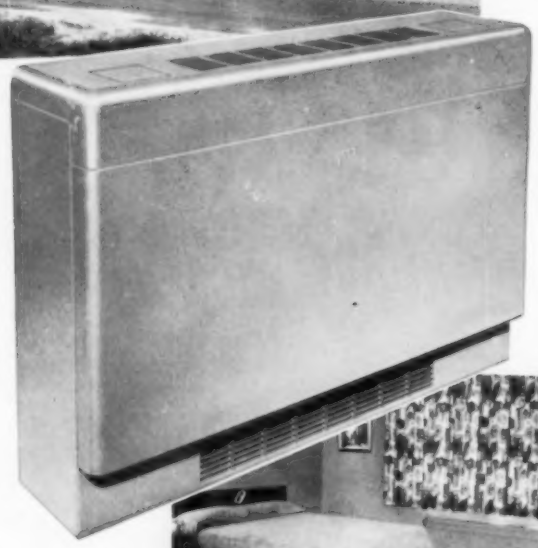

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(Continued from page 16)

13.6 Fertilizers
13.7 Farm Equipment

•

Sweet's 1957 Classification:

1 Foundations
2 Structural Systems
3 Curtain Walls
4 Masonry
5 Wood
6 Metals
7 Glass, Plastics
8 Roofing and Siding
9 Masonry Treatments, Waterproofing
10 Thermal Insulation
11 Sound Control
12 Lath, Plaster, Wallboard
13 Flooring and Wall Covering
14 Surfacing, Paneling
15 Paints, Finishes, Protective Coatings
16 Doors
17 Windows
18 Hardware
19 Door and Window Equipment
20 Skylights, Roof Ventilators, Louvers
21 Store Fronts
22 Partitions, Wirework, Fences
23 Furnishings, Special Equipment
24 Kitchen and Food Service Equipment
25 Bathroom, Washroom, Laundry Equipment
26 Waste Disposal, Cleaning Equipment
27 Pipes and Fittings
28 Water Supply and Drainage
29 Air Conditioning and Heating
30 Electrical Distribution
31 Lighting
32 Communication
33 Vertical Transportation
34 Contractors, Special Services.

LYFORD ROME
Dobbs Ferry, N.Y.

•

Dear Editor: Harold J. Rosen's article, "Standardization of Specifications Trade Sections," will undoubtedly provide food for thought for many of your architectural readers. I trust you will not consider it premature for me to comment on the article in question.

Specifications can be the most controversial subject ever devised, if one wishes to be contrary. I believe we should at all times keep clearly in mind that specifications are designed in the first place for the clients' protection as part of the contract documents, and in the second place for the convenience of the contractors and subcontractors who estimate and bid the work to be performed.

Sections of specifications should therefore follow trade divisions as closely as possible, for the contractors' convenience. How many sections there will be depends on the design of the building. Some buildings require as few as 15 different trade groups, others as many as 40 or more. When one considers the different types of buildings, from churches all the way through to prisons, it is possible that 70 or more trade divisions could be listed. Also, the work done by the different trades might vary to some extent in different parts of the country.

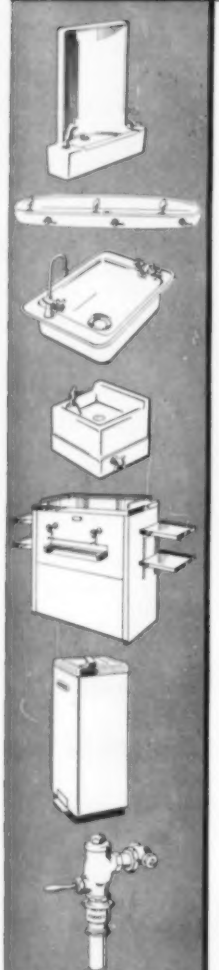
The order in which the sections are listed is not too important, although I think it is logical to try and list them in approximately the same order as the trades appear on the job. The important thing is to have a very complete index to serve as a check list and to see that the specifications are also well indexed. I can see no point in making a general practice of listing any sections that are not included in a specification for a particular job.

The question of trade divisions is one that must be resolved promptly,

(Continued on page 202)

by HAWS

Leading Designs...
for Leading Architects



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"BUBBLER FEATURES"...

- Raised fountain head: angle stream, shielded, anti-squirt... prevents direct mouth contact.
- Self-closing automatic stream control valve.
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HAWS provides drinking water facilities of the finest design for today's architectural planning. Handsome wall and pedestal models meet every design requirement—indoors or out, industrial or institutional! Up-to-the-minute styling by skilled craftsmen make HAWS Fountains the leaders!

All HAWS Fountains contain outstanding sanitation features, insuring a lifetime of unequalled protection. Find out what HAWS drinking water facilities can do for *your* projects!

Write for the new HAWS Catalog—today!

HAWS DRINKING FAUCET CO.
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HAWS also features Electric Water Coolers, Deck-Type Fountains, HAWS Emergency Eye-Wash Fountains.
KRAMER Flush Valves for every make of plumbing fixture.

Design Possibilities... Astronomical!

HAUSERMAN MOVABLE WALLS OF REYNOLDS ALUMINUM

When Hauserman and Reynolds, together, offer you the versatility of aluminum for interior walls, design scope is almost limitless. You choose from any number of embossed textures... multiplied by innumerable colors and countless panel arrangements. Aluminum extrusions provide still another multiplier... joining wall sections with hairlines or narrow beads or wide posts in any profile and in any finish, including brilliant anodizing.

Total possibilities... astronomical!

And all this beauty is combined with the basic advantages of Hauserman Movable Walls... earliest occupancy, lowest maintenance, lifetime service. Write for literature. Or consult the Yellow Pages (under PARTITIONS) and call your nearby Hauserman representative.

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For full information . . . send for your free copy of the revised 1957 Mult-A-Frame catalog: pictures, specifications and typical applications in materials handling, electrical-mechanical, and plumbing fields.

Shown above: 1. Mult-A-Frame has available complete line of concrete inserts, pipe rollers and curved channel for tunnel applications. 2. Mult-A-Frame is ideal for grids, catwalks and light supports. Shown here, Mult-A-Framed TV studio. 3. Mult-A-Frame is increasingly popular as a fluorescent fixture hanger and for supporting luminous ceilings.

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So thin an 8" wall can hide it!

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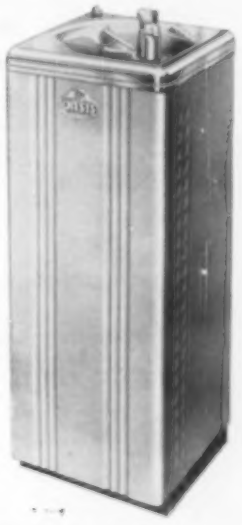
It's Oasis' latest—a super-compact water cooler. Supplies refreshingly cold water to as many as 4 new *or already installed* remote drinking fountains in restaurants, office buildings, factories, hospitals, institutions, *and homes.*

Easy To Install—structural limitations are no problem for the versatile Oasis In-A-Wall. It's *built thin to build in* . . . and it mounts just as easily on a joist, in closets, or on-a-wall.

TWO MODELS AVAILABLE—the small Oasis model, IW-5, supplies 5 GPH, sufficient for 60 persons in offices or schools, and 35 in light industry. The large model, IW-10, has a capacity of 10 GPH, adequate for 120 people in offices and schools and 70 in light industry.

An Oasis Water Cooler For Every Requirement—The complete Oasis Water Cooler line includes models with capacities from 2 to 35 GPH, hand or foot operated, pressure or bottle, stainless steel, heavy duty, explosion proof, air-sealed industrial, cafeteria, juvenile, refrigerated compartments, and the famous Oasis Hot 'n Cold which makes piping hot water, as well as cold water.



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Here is an outstanding modern design and an excellent use of SPANDRELITE *in combination with* SOLEX *heat-absorbing, glare-reducing plate glass. It's the First National Bank Building in Colorado Springs, Colorado . . . Edwin A. Francis-Carlisle B. Guy, Associate Architects, Colorado Springs, Colorado.*

Clad in color that will never fade with weather-resistant Spandrelite

THESE two modern buildings are excellent examples of how Pittsburgh SPANDRELITE can be used to advantage for the spandrel areas in curtain wall construction.

No other material can duplicate SPANDRELITE for this kind of service. Since it is a true glass, it has the ageless qualities of glass—non-porous and non-absorbent, with complete resistance to weathering and corrosion. In these latter qualities, it is unquestionably superior to any other currently available curtain wall material.

SPANDRELITE is produced in 16 standard colors, or we can custom-match just about any color you specify. The color, incidentally, is a ceramic which is fused to the back of the heat-strengthened glass. The color will not fade, and it can be duplicated easily. SPANDRELITE has far greater impact resistance than standard plate glass.

Standard surfaces are available in either polished or twill. SPANDRELITE is sold through branches and distributors of the Pittsburgh Plate Glass Company.

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This is the Hospital Service Plan Building in Newark, N. J. The curtain wall uses SPANDRELITE *in combination with* TWINDOW® *insulating windows and* SOLEX® *glare-reducing, heat-absorbing plate glass. Architect: Frank Grad & Sons, Newark; Eggers & Higgins, New York City, Associated Architects.*

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Another Gold Bond
ASBESTONE APPLICATION
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...with Gold Bond Corrugated ASBESTONE "400"

This modern Westinghouse plant in Vicksburg, Miss., used Corrugated ASBESTONE "400" for curtain walls outside *and* for noise baffles and heat diffusers inside, to make *sure* of:

1. ***Saving* on material costs.**
2. ***Saving* on construction costs.**
3. ***Saving* on maintenance costs.**

The curtain walls at Westinghouse help keep the inside cool on hot days... the baffle-walls minimize reverberations and cut down hot air movement within the large manufacturing and processing area. And these installations will last because Corrugated ASBESTONE "400" permanently resists fire, adverse weather conditions, corrosion and rot.

You can make sure too, when you specify rugged, low cost Corrugated ASBESTONE "400" for your clients. For further details write Dept. PA-107, National Gypsum Company, Buffalo 2, N. Y.

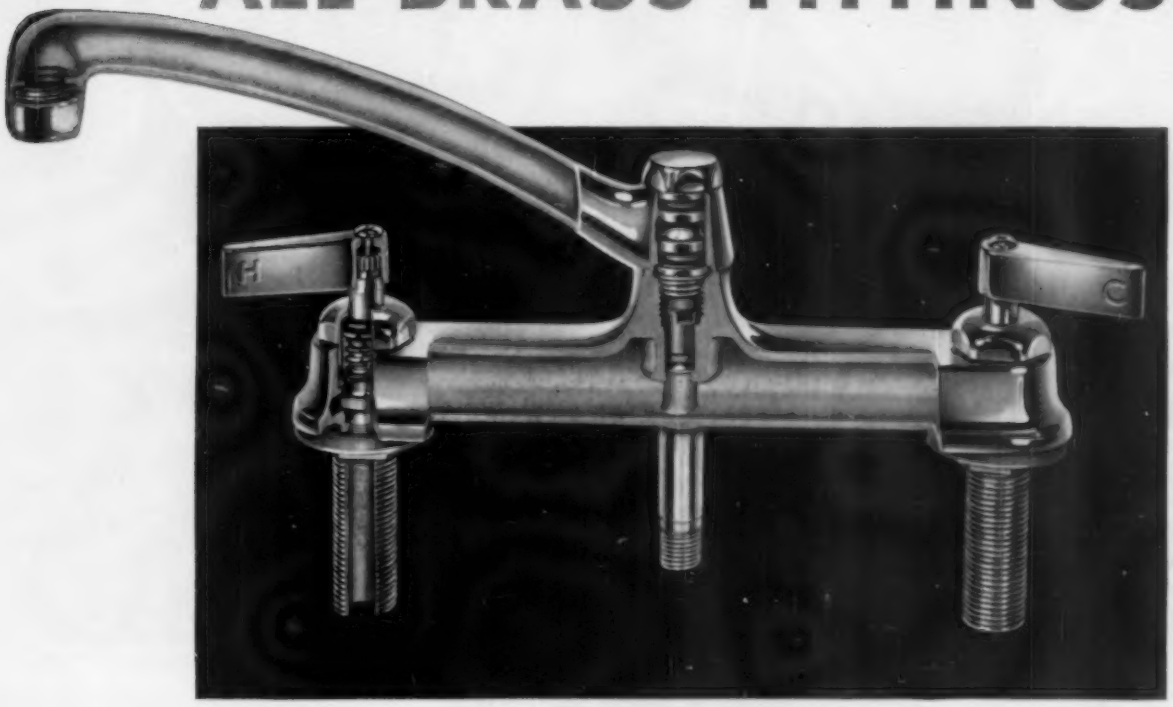
CORRUGATED ASBESTONE "400"

NATIONAL GYPSUM COMPANY

Gold Bond
BUILDING PRODUCTS

KOHLER

ALL-BRASS FITTINGS



Every bit of metal in a Kohler fitting, underneath the chromium plating, is brass, of high copper content. This includes handles and escutcheons.

Brass has no equal for serviceable and satisfactory plumbing fittings.

- **Brass is superior in wearing qualities.**
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Better than any other metal or alloy, brass takes and holds chromium plating, giving Kohler *All-Brass* fittings their long-lasting bright, jewel-like beauty.

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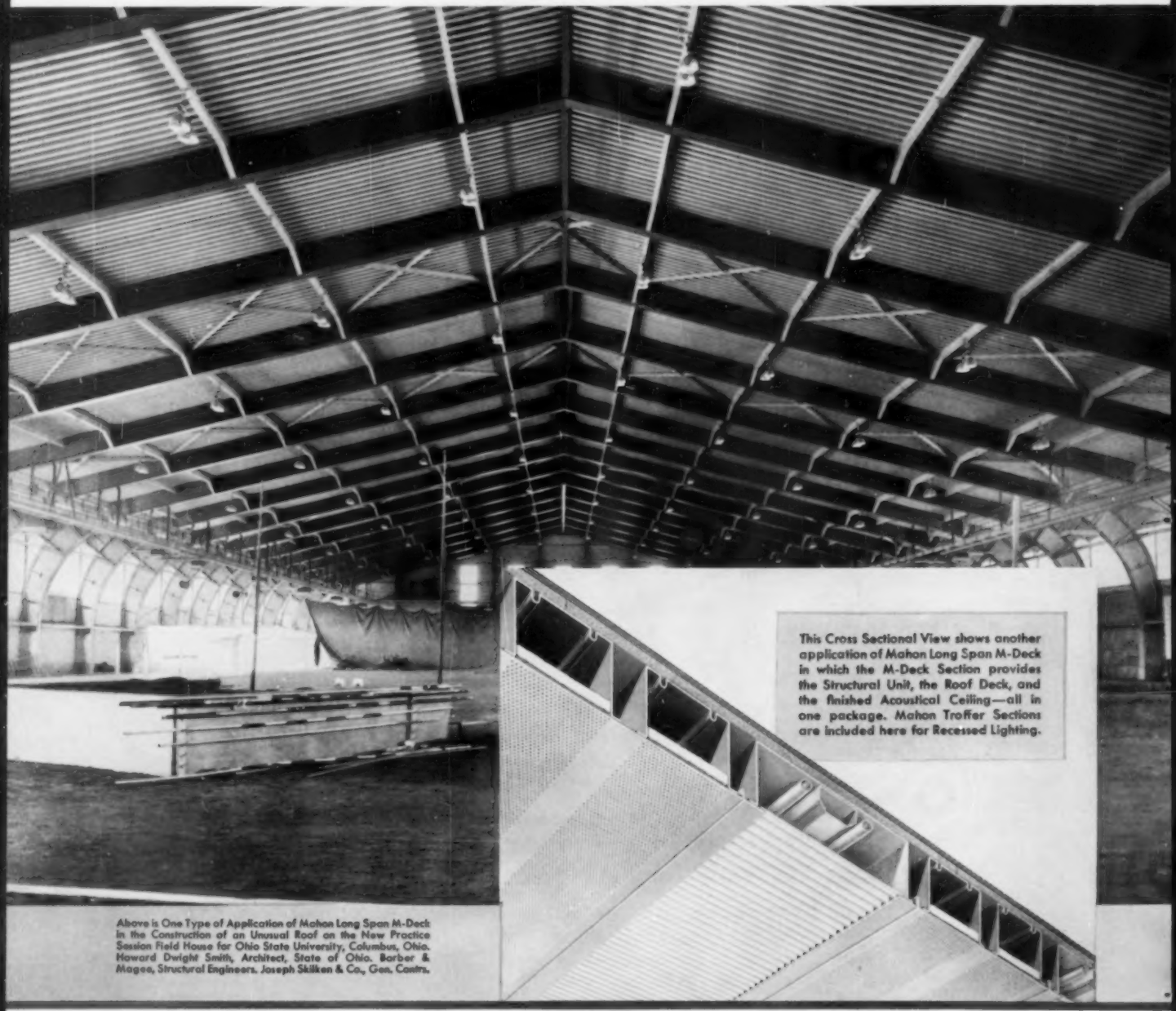
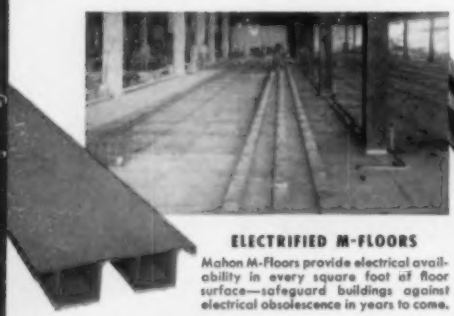
M-DECKS Open the Way



Above is One Type of Application of Mahon Long Span M-Deck in the Construction of an Unusual Roof on the New Practice Session Field House for Ohio State University, Columbus, Ohio. Howard Dwight Smith, Architect, State of Ohio. Barber & Magee, Structural Engineers. Joseph Skilken & Co., Gen. Contrs.

This Cross Sectional View shows another application of Mahon Long Span M-Deck in which the M-Deck Section provides the Structural Unit, the Roof Deck, and the finished Acoustical Ceiling—all in one package. Mahon Troffer Sections are included here for Recessed Lighting.

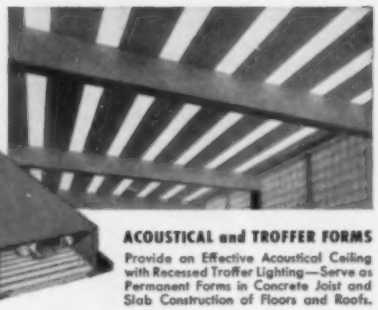


ELECTRIFIED M-FLOORS

Mahon M-Floors provide electrical availability in every square foot of floor surface—safeguard buildings against electrical obsolescence in years to come.

CONCRETE FLOOR FORMS

Mahon Permanent Concrete Floor Forms in various types meet virtually any requirement in concrete floor slab construction over structural steel framing.

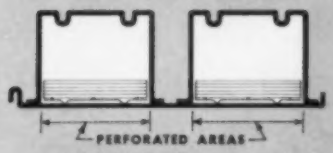


ACOUSTICAL and TROFFER FORMS

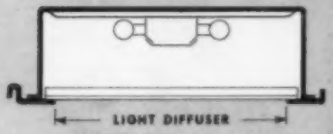
Provide an Effective Acoustical Ceiling with Recessed Troffer Lighting—Serve as Permanent Forms in Concrete Joist and Slab Construction of Floors and Roofs.

to New Concepts in both Structural Design and Function of a Modern Roof!

MAHON
ACOUSTI-STRUCTURAL
LONG-SPAN M-DECK SECTIONS



SECTION M2SR (Acoustical)

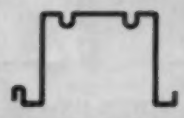


SECTION M1ST (Troffer)

SECTION M2 (Acoustical)

SECTION M3 (Acoustical)

MAHON
LONG SPAN OPEN BEAM M-DECK


SECTION M1-OB

In M-Decks the architect is given a versatile building product that permits him to design a simple roof in which the structural supporting members, the roof deck, the finished ceiling material, and the acoustical treatment can all be contained in one light weight, quickly erected unit.

In auditoriums, armories, sports arenas, field houses, churches, or any type of building where rigid frame or exposed truss construction is employed, Mahon Cellular Steel M-Decks provide the structural roof and the finished ceiling material combined. Many arrangements are possible and many ceiling effects are obtainable.

The long span structural M-Deck Sections span from wall to wall or from truss to truss. This eliminates roof beams and the cluttered effect of roof purlins, and produces a neat, continuous beamed or flat metal ceiling surface which is virtually indestructible. If recessed lighting is desired, Mahon Troffer Sections can be included in this type of roof-ceiling construction in any ratio to meet specific lighting requirements. Exposed metal surfaces of both M-Deck and Troffer Sections, which form the ceiling, can be readily painted to harmonize with any interior decor.

All Mahon cellular, Long Span M-Deck Sections can be furnished with bottom metal perforated and sound absorbing material inserted to provide a highly effective acoustical ceiling . . . Noise Reduction Coefficients range up to .85 in ceilings constructed with Mahon Sections recommended for this use.

Some of the newer Mahon Sections do not appear in the current Sweet's Files. Why not have a Mahon sales engineer call and bring you up to date on new Mahon Sections now available for Electrified Sub-Floor, Roof, and Combined Roof-Ceiling Construction.

THE R. C. MAHON COMPANY • Detroit 34, Michigan
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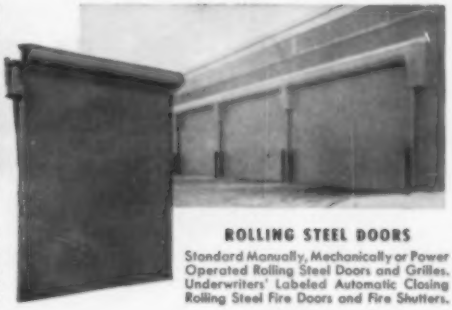
M A H O N

INSULATED METAL WALLS
Three Distinctive Patterns with "U" Factor Superior to that of Conventional Masonry Wall with Lath and Plaster. Erected up to 60 Ft. in Height without a Horizontal Joint.

UNDERWRITERS' RATED FIRE WALLS
Mahon Metalclad Fire Walls carry two Hour Rating by Underwriters' Laboratories, Inc., for Use as Either an Interior Dividing Fire Wall or an Exterior Curtain-Type Fire Wall.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Standard Manually, Mechanically or Power Operated Rolling Steel Doors and Grilles. Underwriters' Labeled Automatic Closing Rolling Steel Fire Doors and Fire Shutters.

an important announcement:

PAINE REZO DOORS

T.M. REGISTERED

Now BETTER THAN EVER with

SUPER SATIN SURFACE

SSS

SUPER SATIN-SURFACE*

. . . the new microseal surface-treating process that gives REZO doors a finish so satin smooth you'll hardly believe your fingertips as you feel it!

Paine REZO Super Satin Surface Doors are now available factory-treated with this new Super Microseal process. This amazing new process uses special equipment to apply a precision-controlled, penetrating solution of additives which is followed by the application of heat and pressure. By "fusing" the wood lignin and additives, the result is a Super Microsealed door surface that resists soiling . . . prevents grain and fiber raising . . . has a uniform surface texture that is hand rubbed in appearance . . . enhances the natural beauty of the wood, and should a higher gloss be required, it takes paste wax, penetrating stain, varnish, lacquer, or paint with *better results* than you've ever known before. It's a fact—words cannot describe the difference this new process makes. You have to feel it yourself to believe it! Write for full details of the Paine REZO "Triple S" Doors today.

* Trademarks "Super Satin Surface" and "Triple S" or "SSS"—Use licensed on products having a Super-sealed or Super Microsealed surface that satisfies the quality standards of the trademark owner.

America's finest flush doors are Rezo doors with all wood grid core

and they are made only by

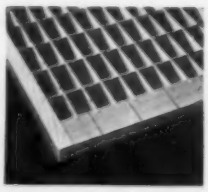
PAINE

LUMBER COMPANY, LTD.

ESTABLISHED 1853 • OSHKOSH, WIS.

Below are two of many reasons why Paine REZO Doors, with air-vented, all-wood grid core, are America's finest doors for residential or institutional installation.

Air vents in Rezo Doors help equalize moisture content inside.



Rezo's all wood grid core assures rigidity, strength, light weight.

Built-in snow removal called for piping dependability —they used Wrought Iron

Not just snow melting—but *dependable* snow melting—was the leading design objective for this access ramp.

That's why designers of the new Connecticut General Life Insurance Company office building gave such careful consideration to material selection for this access ramp. Four major factors supported the use of wrought iron for this job: its corrosion-resistance—rugged strength—low coefficient of expansion with concrete—ease of fabrication.

In addition to snow melting service, wrought iron pipe was also installed for well water and cold water lines, chilled water mains, and well water piping in the heating and cooling system. Our booklet, "Byers Wrought Iron for Snow Melting Systems," offers case-history support for wrought iron's reliability in this service. Write for a copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Division Offices in Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. International Division: New York, N.Y.

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Its name: Dallas Memorial Auditorium

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Its architect: George L. Dahl, architects and engineers

Its contractors: R. P. Farnsworth & Co., Inc.

Among its appointments: Yale 8000 Series Locksets

Its consultant: Ammann & Whitney, consulting engineers

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—especially
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Distinctive Yale 8000 Series Locksets give institutional structures, hotels, apartment buildings, emporia, restaurants, the very best in functional security—linked with modern, graceful styling that compliments any interior or exterior design. Series 8000 locks (with key- or latch-operated deadbolt... with brass, bronze or bright chromium finish) are reversible and corrosion-resistant. Attributes such as eye-appeal, efficiency, convenience, durability, you'll find in all Yale mortise locks. And each model—in its own way—will agree with your concept of clean design, correct proportion... add renowned Yale security to your building.

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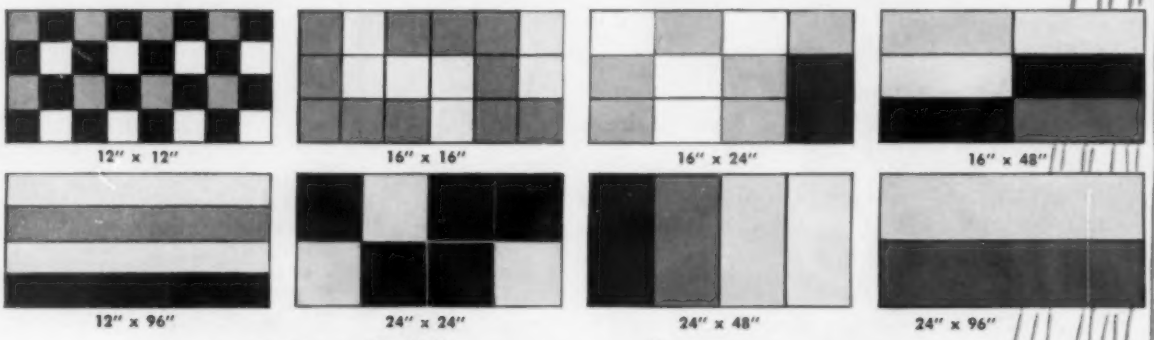
ANOTHER HOMASOTE "**FIRST**" IN DRY-WALL CONSTRUCTION

NOW ON 4′ x 8′ PANELS

WALL and CEILING TILES



in 33 different designs

A totally *new dimension* in wall and ceiling treatments — offering an endless variety of design at great construction economies

PANL-TILE is the first material of its kind for dry-wall tiling of *both* walls and ceilings. These sturdy 4′ x 8′ panels are grooved every 12″ or every 16″—and on special order may be grooved in any multiple of 8″ or 12″. Thus the architect or builder has tiles in the shape of squares — in several sizes; in the shape of rectangles — in several proportions and sizes, *horizontal or vertical*. In addition, the tiles take any paint or stain beautifully in a myriad of color harmonies — may be used with moldings for raised paneling effects.

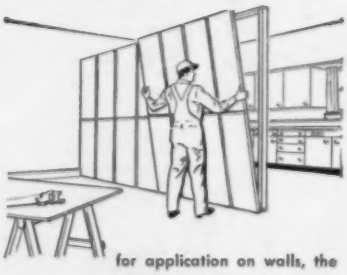
The unique ⅜″ wide groove is far more striking than simple scored lines — and can be painted in blending or contrasting colors to original color schemes.

The 4′ x 8′ panels make application of Panl-Tile exceedingly fast. Joints are automatically taken care of with the 3-stage, groove-lap joints on all sides and edges. True-line joining is assured.

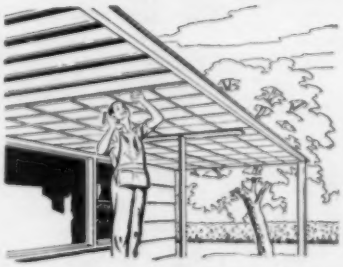
Because Homasote Panl-Tile is weatherproof, it is used outdoors as well as indoors. The standard linen surface exhibits important sound-deadening qualities; and for greater acoustical effect, *Panl-Tile is also available with funnel perforations*. The tile may be secured unpainted, or painted white, one coat, one side.

* * *

Write now for complete specifications and application data. Thirty-three different wall or ceiling designs are suggested in the new Panl-Tile folder. Kindly address your inquiry to Department K-9.



for application on walls, the 4′ x 8′ panel means real speed and ease of handling (also in 2′ x 8′, 2′ x 4′, or 1′ x 8′ panels).



for ceiling and soffit erection, a "T" supports the panel during nailing.

HOMASOTE COMPANY, TRENTON 3, NEW JERSEY

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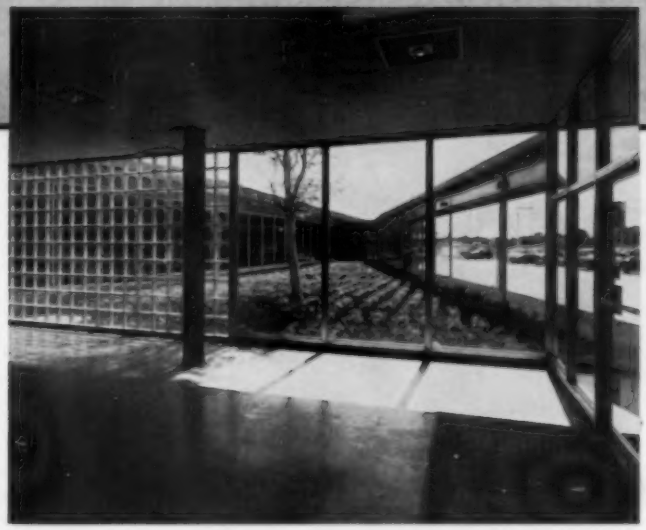

Photo By Walbridge & Bellg, Inc.

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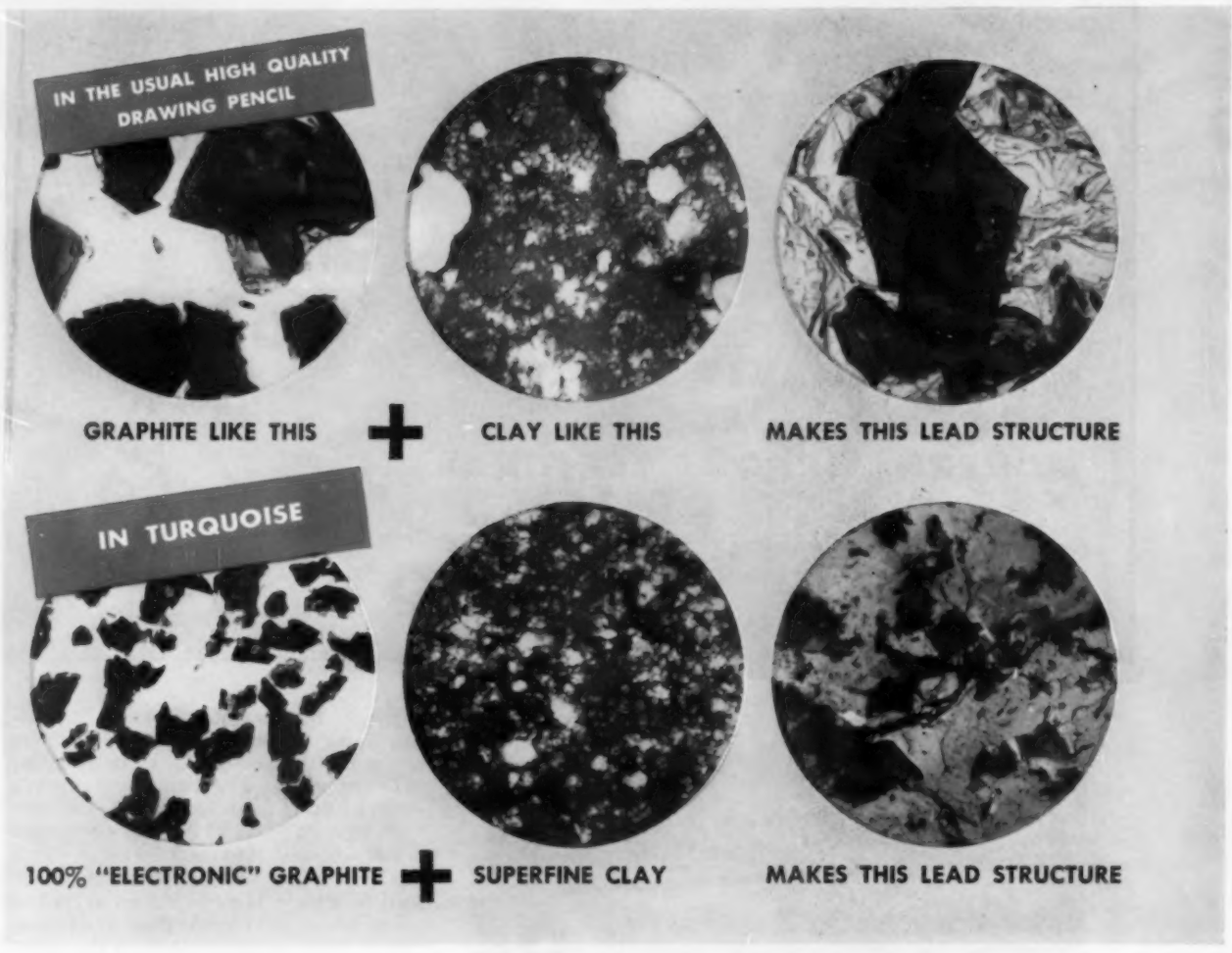

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PROVEN GRADING -17 different formulae make sure you get exactly the line you expect—from every pencil, every time.

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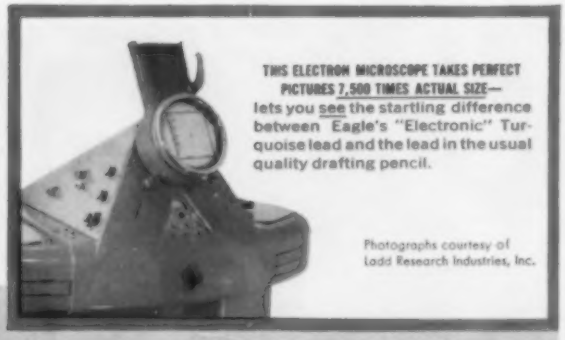

THIS ELECTRON MICROSCOPE TAKES PERFECT PICTURES 7,500 TIMES ACTUAL SIZE—lets you see the startling difference between Eagle's "Electronic" Turquoise lead and the lead in the usual quality drafting pencil.

Photographs courtesy of Ladd Research Industries, Inc.

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Relatively large, irregular particles of graphite make a rough-edged line with gaps that permit the passage of light. Prints will be inferior.

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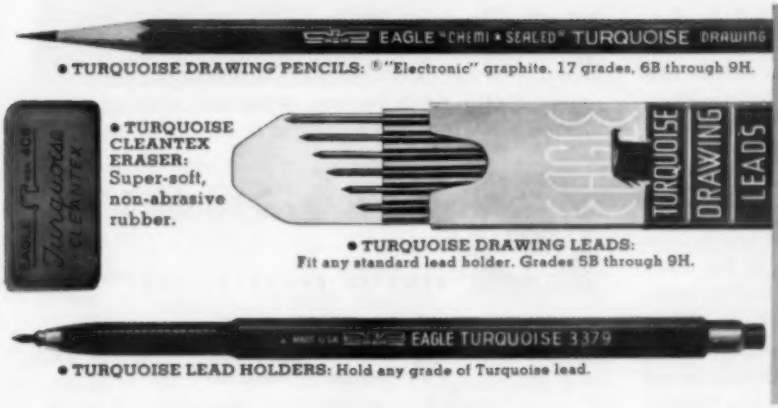
Tiny, more uniform particles deposit as a clean-edged, solid opaque line that blocks the light and reproduces to perfection.

WRITE FOR FREE SAMPLE DEMONSTRATION KIT
(including Turquoise wood pencil, Turquoise lead, and Turquoise "skeleton" lead) naming this magazine. Eagle Pencil Company, 703 East 13th Street, New York, N. Y.



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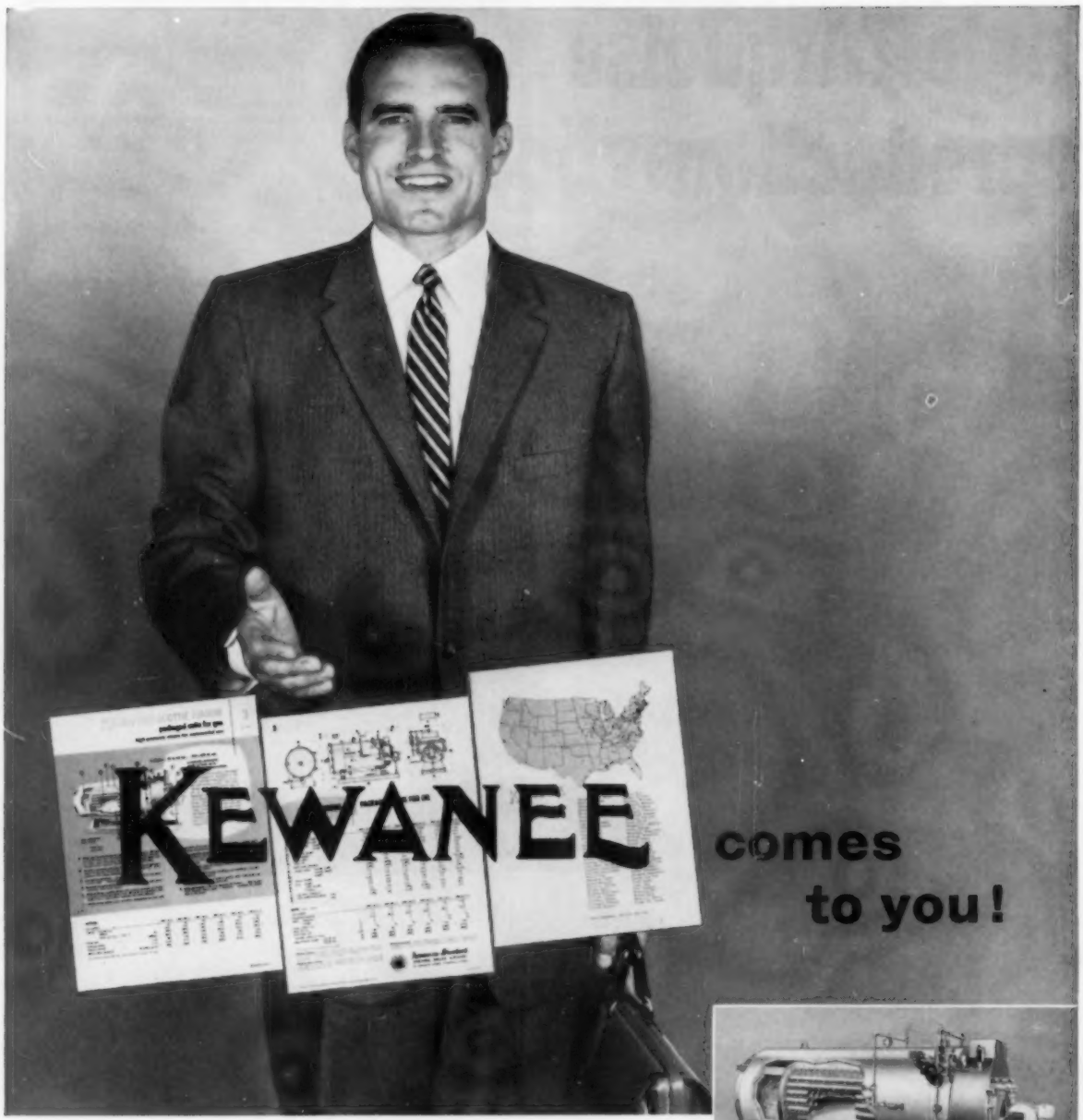
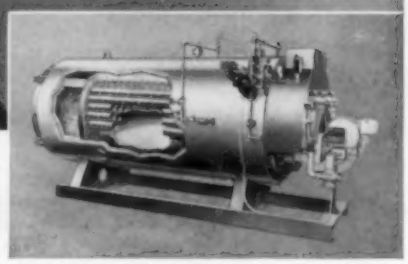


Face-to-face with your Kewanee Man, you can explain exactly what you want to know. And he's able to give your boiler problems his personal attention, because there are *enough* Kewanee representatives to let each man do his job right! Actually, over 300 trained Kewanee Men operate from a network of 69 offices in 48 states—well able to regularly visit smaller towns as well as metropolitan centers.

Your Kewanee Man, for example, keeps up-to-date your catalog of Kewanee's complete line of fire-tube steel boilers to 651 h.p. These are the boilers with famous "cruising speed" operation . . . the boilers with an 89-year record of dependability, ease of maintenance and low operating cost. AMERICAN-STANDARD, KEWANEE BOILER DIVISION, 101 Franklin Street, Kewanee, Illinois



Ideal for laundry, cannery, dairy or other small plant, the Kewanee Scottie Junior Package is available in six sizes for oil or gas . . . 18 to 65 h.p., 125-150 lb. wp.

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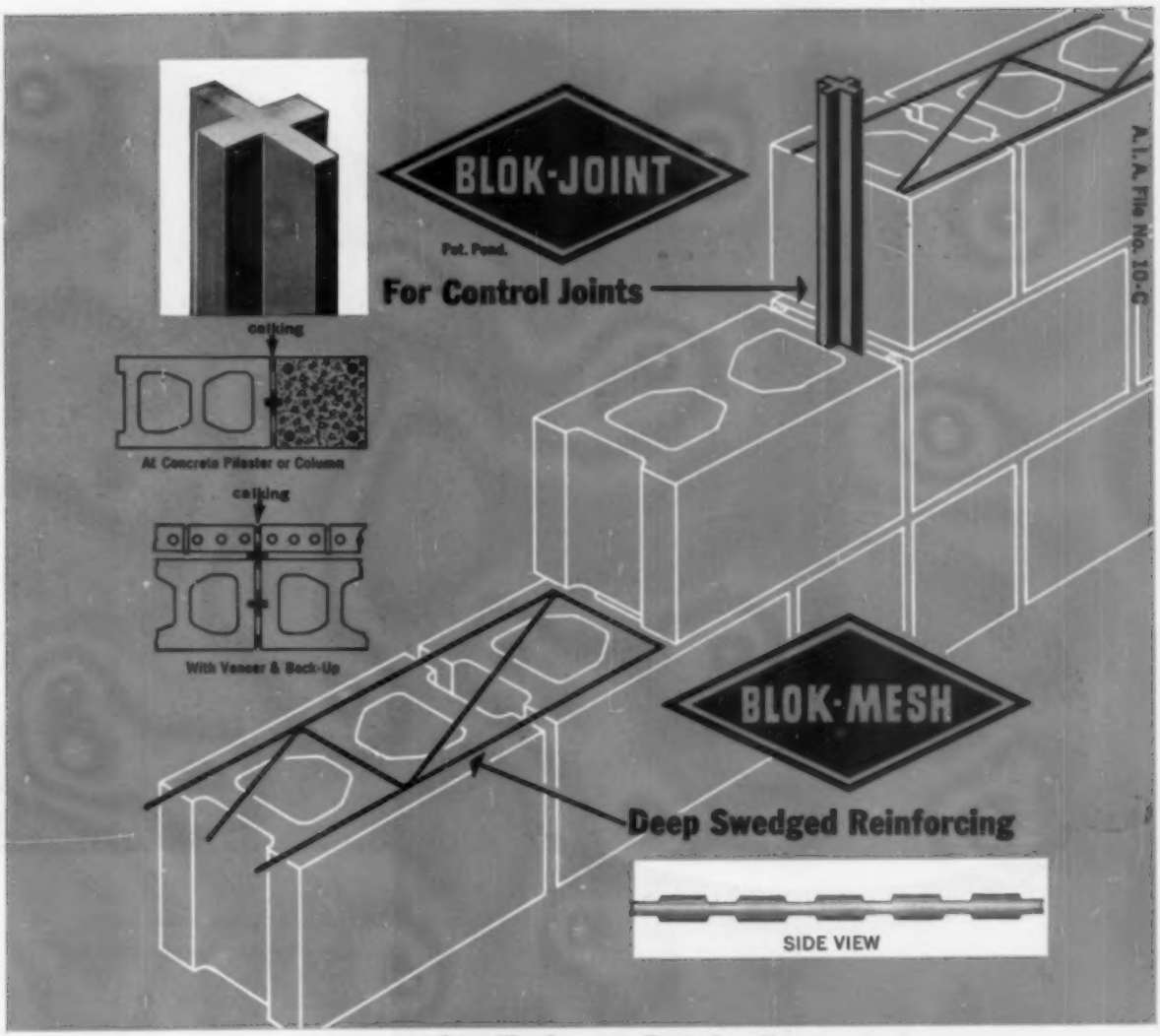

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MORE STRENGTH & PROTECTION IN MASONRY WALLS

Blok-Joint is a cross-shaped rubber extrusion used to make control joints in masonry walls. No special blocks are required—no building paper and mortar fill is necessary. No cutting or sawing to be done. Blok-Joint is used with any standard metal window sash block.

The secure interlock provided by Blok-Joint adds to the lateral stability of the wall. It allows for contraction *and* expansion while maintaining a firm joint.

Blok-Joint is effective in single block walls, with brick and block backup and at pilasters and columns.

The big advantage you get with Blok-Mesh is the exclusive "Deep-Grip" swedging. It allows the mortar to get a real bite on the reinforcing yet requires no more area in joint than other types of superficial deforming.

Blok-Mesh is designed to eliminate cracks above lintels and below sills. It minimizes ordinary shrinkage cracks. Notice in the illustration how the "Deep-Grip" swedging of Blok-Mesh is large, deep and well-defined to form effective dovetailing.

For Further Information

Write for FREE Blok-Joint sample

and literature on Carter-Waters 2-point better masonry wall design.

For Further Information See

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Architectural or Industrial Construction File

CARTER-WATERS

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It's here...

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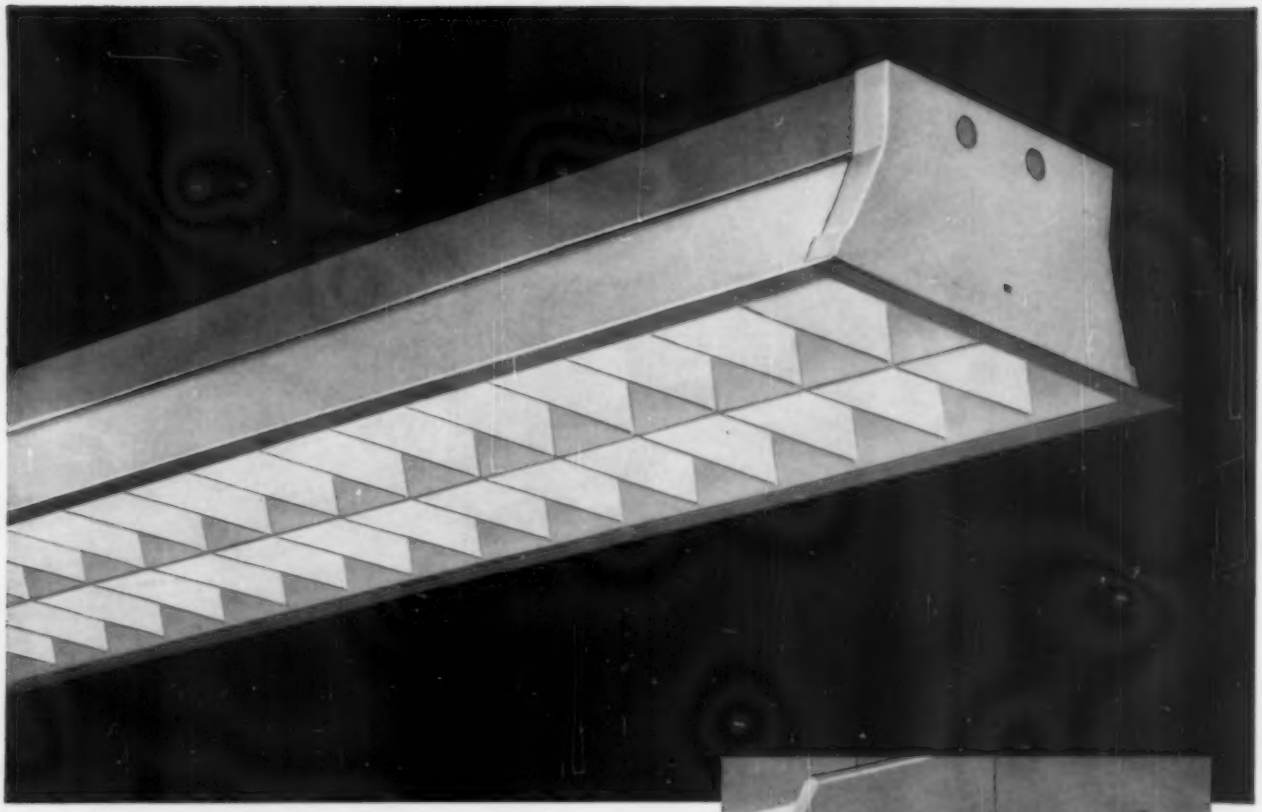
Curtis Troffer

with **L.B.Q.***

Showing how LBQ Fin reflects light downward in true parabolic pattern. Provides low-brightness quality, proper diffusion, minimum glare.

Curtis Eye Comfort Alzak Aluminum Troffer with LBQ Louver Fin. Snap-on yoke and toggle bolts for easy application to any ceiling: plaster, acoustical tile, or inverted T-grid. New shallow depth . . . maximum recessing space required, 6½".



Exclusive with Curtis—LBQ Louver Fin with*
**Low-Brightness Quality—assures rigid, rugged strength*

The end result desired in lighting is high level illumination with maximum visual comfort. Both are achieved with the new Eye Comfort®, Alzak† Aluminum Troffer, by Curtis. This new troffer features a completely unique and exclusive design in the extruded LBQ Louver Fin—an original Curtis development. The heaviest Alzak Aluminum Fin yet devised provides absolute rigidity and permanent strength—longest life, ever. V-bar and fin of the Curtis Troffer produce a parabolic pattern in both directions. With the LBQ Louver, *only Curtis has a true parabolic-shaped fin.* Result: High output . . . with low-brightness quality . . . from all critical viewing angles. There's proper diffusion, comfortable illumination, wherever light is cast. Reflected glare is minimized. Be one of the first to see how the new Curtis Eye Comfort Troffer, with extruded LBQ Louver Fin, can solve lighting problems better in offices, schools, stores, institutions—all commercial buildings. Write today for a demonstration by a Curtis Visioneer (vision engineer) in planned lighting.

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Visioneers in Planned Lighting©

Extruded LBQ Louver Fins rigidly lock into heavy gauge Alzak Aluminum V-Bar. Louver quickly snaps into place—no latches or tools required. Unbroken lines of light, with no intervening light obstructions between end plates.

This is another example of Curtis Planned Lighting . . . high level illumination plus complete visual comfort. Installation: Third National Bank, Rockford, Illinois.

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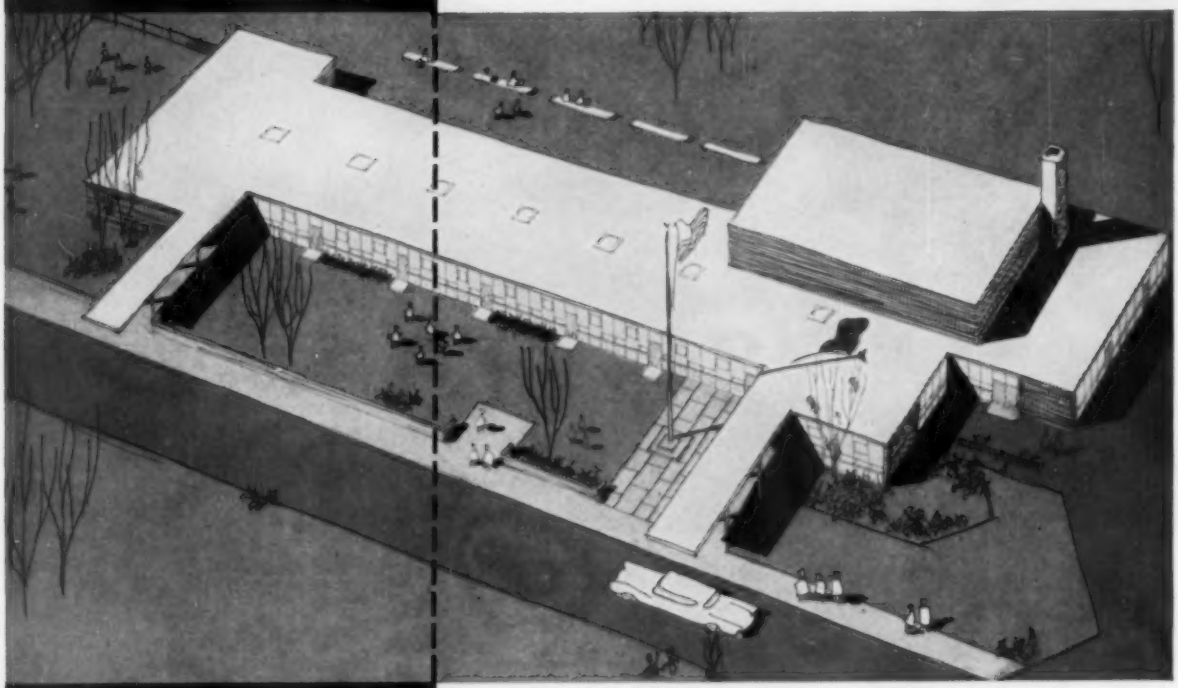
HOLMDEL ELEMENTARY SCHOOL,
Holmdel Township, N. J.

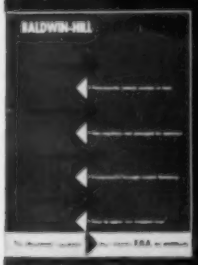
Architects:
Micklewright and Mountford,
Trenton, N. J.

General Contractor:
J. S. Preston, Middletown, N. J.

Perimeter Insulating costs so little when you *specify*



BALDWIN-HILL *perimsul*



Write for new brochure giving installation methods and properties of B-H Perimsul.

You, too, can take advantage of the low installed cost of Baldwin-Hill Perimsul when writing your insulation specifications for slab constructed buildings or those with crawl spaces. Fabricated specifically for use as a perimeter insulation, B-H Perimsul has a Thermal Conductivity "K" of 0.26 (btu, in./hr, sq ft, °F at 75°F mean temp.).

At the new Holmdel School, specifications call for the vertical installation of B-H Perimsul against the foundation walls. The architect explains, "B-H Perimsul provides us with most effective floor slab heat loss protection; is priced competitively; and has proven faster and, therefore, more economical to install."

BALDWIN-HILL COMPANY

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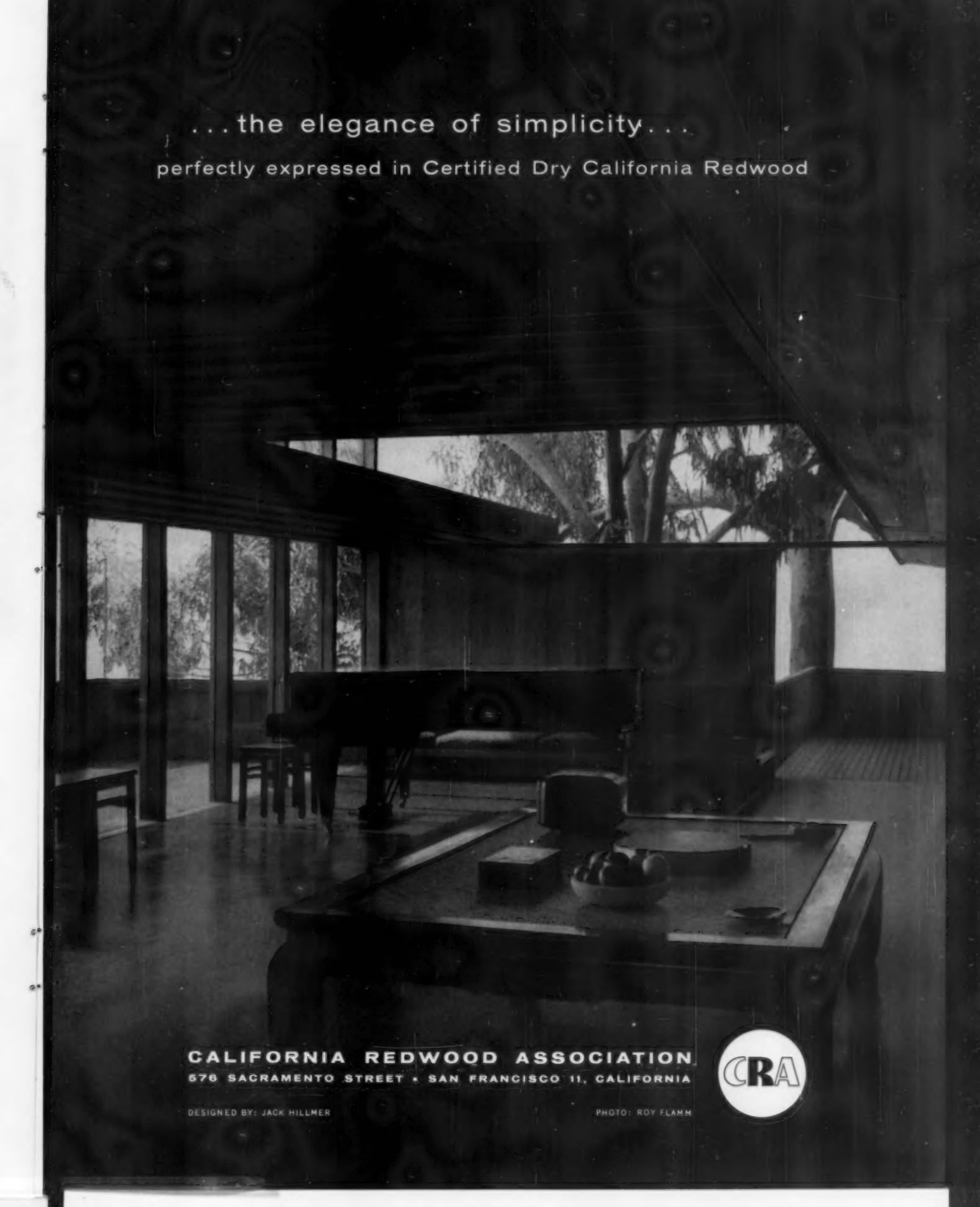
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perfectly expressed in Certified Dry California Redwood
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CHILDREN'S HOSPITAL . . .

LASTING BEAUTY

Le Bonheur Children's Hospital has been widely acclaimed for its outstanding architectural design. The friendly, homelike atmosphere strikes you as soon as you enter the main hall with its cheerful green Linotile floor. But appearance alone didn't determine the architect's choice. Linotile is also extremely durable . . . completely greaseproof . . . highly stain-resistant. Despite many years of concentrated traffic, this floor retains its colorful beauty.

Le Bonheur Children's Hospital, Memphis, Tenn.

architect: J. Frazer Smith, F.A.I.A.

SHOWROOM . . . INSURANCE OFFICE . . .

the flooring spec: Armstrong Linotile

MINIMUM MAINTENANCE

It takes a resilient floor with unusual characteristics to stand up under the dirt, grit, and grime tracked into this busy off-the-street showroom. Armstrong Linotile meets this condition with minimum maintenance because of its exceptionally dense, smooth composition. This floor has proved itself in countless stores and public buildings of all types.

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architect: Dean Barnhizer, Company Architect

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In this bustling insurance office, Linotile withstands the static loads of heavy office furniture without showing permanent indentation. Especially designed for busy areas, Linotile doesn't wear into traffic lanes; reduces the clatter of footsteps.

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architect: Thorshov and Cerny, Inc., Architects and Engineers

Armstrong Linotile — an exclusive Armstrong Floor — has an enviable record of more than 40 years for decorative versatility, ease of maintenance, and exceptional durability. A full 1/8" thick, the wearing surface extends through the entire thickness of the tile. It should not be confused with linoleum cut into blocks. Armstrong Linotile is specially processed for superior resistance to abrasion and indentation . . . is capable of withstanding static loads up to 200 lbs. per sq. in. Linotile is offered in two stylings — an unusually bold marbleizing and a subtle tone-on-tone effect; in many colors and sizes. It may be installed on all types of suspended sub-floors.

The Armstrong Cork Company makes all types of resilient floors. Therefore, unbiased recommendations can be made for every flooring need. For product and technical information, flooring samples, complete specifications, design and color scheme assistance, call the Architectural-Builder Consultant in your nearest Armstrong District Office or write direct to Armstrong Cork Company, Floor Division, 710 Watson Street, Lancaster, Pennsylvania.

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Approximate Installed Prices per Sq. Ft. (Over concrete, minimum area 1000 sq. ft.)

20¢ to 35¢	Decoray® Linoleum Tile Asphalt Tile, 1/8" (A, B, C, D) Linoleum, light gauge Asphalt Tile, 3/16" (A, B)	35¢ to 45¢	Linoleum, standard gauge Asphalt Tile, 3/16" (C, D) Linoleum, 1/8" ("Battleship") Greaseproof Asphalt Tile Cork Tile, 3/32"	45¢ to 60¢	Corlon® (Sheet Vinyl) Linoleum, 1/8" Cork Tile, 1/8" Excelon® Tile (Vinyl-Asbestos) 1/8"	60¢ to 70¢	Rubber Tile, 1/8" Cork Tile, 3/16" Linotile® Corlon (Hydrocord® Back) Linoleum (Cushion-Eze® Back**)	70¢ to 90¢	Custom Corlon Tile (Homogeneous Vinyl) 3/32", 1/8" Cork Tile, 5/16" Rubber Tile, 3/16" Corlon (Cushion-Eze Back)	95¢ to $1.30	Custom Vinyl Cork Tile Imperial® Custom Corlon Tile

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You can buy entranceway *doors* made from this same miracle metal.

Stainless Steel doors are unequalled for strength because (1) the steel itself is so strong and (2) Stainless can be *welded* into solid, rigid joints that won't sag or work loose. Also, because Stainless is so hard, it is almost impossible to dent it. Stainless Steel doors have phenomenal resistance to corrosive floor-cleaning solutions. And they stay clean with ordinary soap and water, which, incidentally, have no effect on the gleaming surface.

Naturally, Stainless Steel doors cost a little more, a *very* little more than other quality doors. But they cannot be equalled for their good looks, trouble-free performance and low maintenance. Compare them, in any way, with any other kind of door.

USS STAINLESS STEEL

UNITED STATES STEEL

For walls that go with any decor

SIMPSON TOASTED "V" GROOVE REDWOOD PLYWOOD

When you have a client who says, "I want a room that goes with the furniture we already have," you'll be wise to recommend Simpson Toasted "V" Groove *redwood* plywood paneling. This versatile wood goes with any decorating scheme.

It consists of clear, all heart rift grain redwood plywood, with a rich sheen to it, and with deep grooves literally "toasted" in every 5, 11, 7, 9, 10 and 6 inches for a relaxed, friendly random-planked effect.

This distinguished paneling by Simpson offers architects rare opportunities for warm yet dramatic effects in new homes, offices and public buildings. It is also ideal for remodeling, since it can be put up right over old wall surfaces.

So if you want to give your client's project inherently warm and welcoming overtones, specify interiors of Simpson Toasted "V" Groove redwood plywood paneling. Simpson Toasted "V" Groove plywood paneling is also available in fir, Philippine mahogany and knotty pine.

Simpson M&M

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FREE Toasted "V" Groove Redwood sample together with Simpson's new 36-page booklet, "Manual on Finishing Plywood," which has 88 full-color finish illustrations plus decorating ideas and suggestions for the use of plywood in the home.

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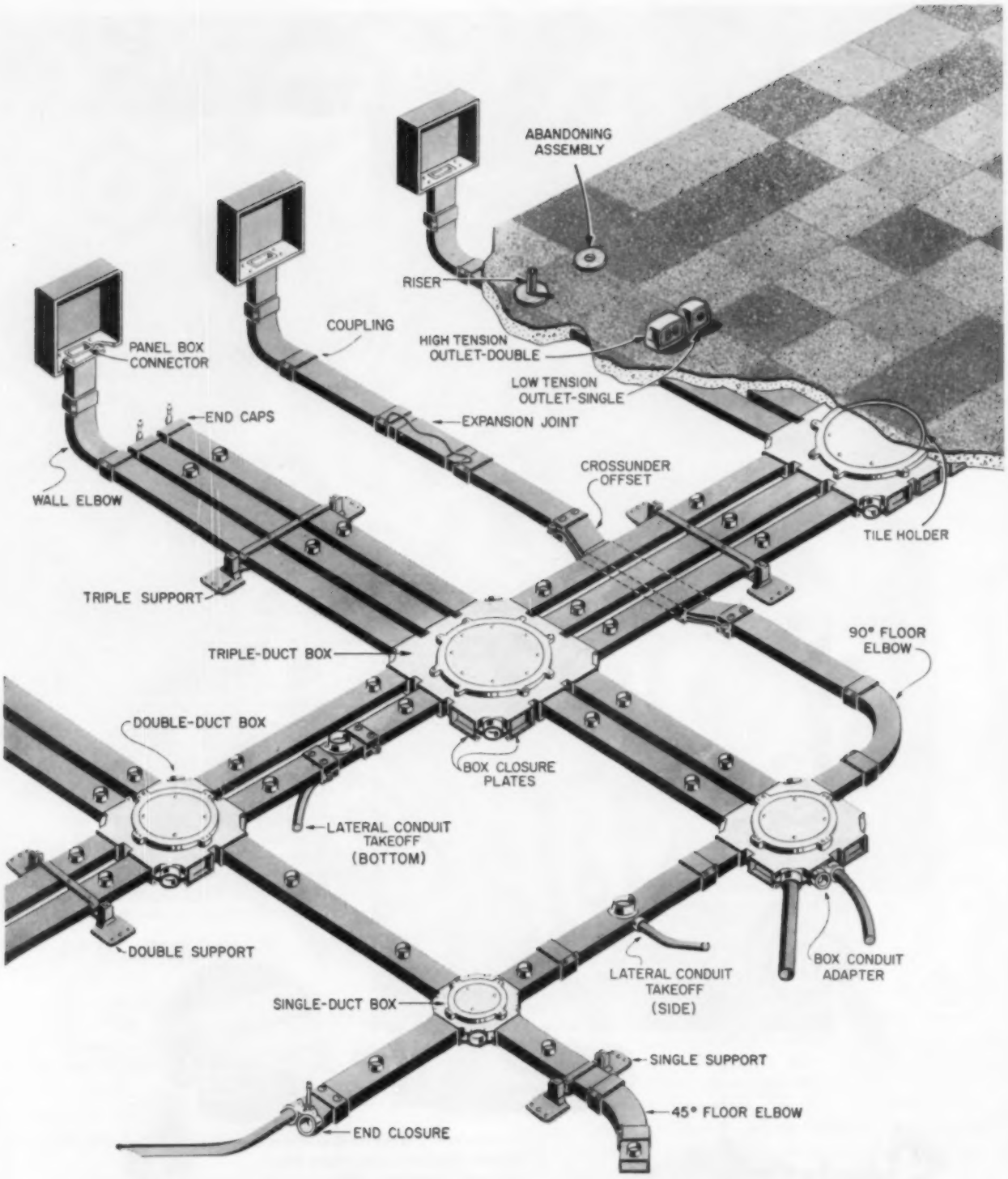

General Electric's new single-level steel underfloor wiring system provides a low-cost but efficient means of handling both feed and branch circuits. The simple, flexible design permits installation under any conventional floor layout without special adaptations.

These new, attractive surface fittings are available for both the new G-E single-level and the G-E two-level steel underfloor duct systems. The modern styling with low silhouette was designed especially to blend with the modern interiors of today's buildings.

General Electric offers you a . . .

NEW SINGLE-LEVEL STEEL

underfloor wiring system

For all types of floor constructions . . . can be used in fills as shallow as 2½ inches.

You have a complete choice of steel underfloor wiring systems from General Electric: The G-E cellular-steel floor system . . . the G-E two-level steel system . . . *and now General Electric's new single-level steel system.*

This addition to the G-E line of steel underfloor systems is designed for standard floor layouts where the greater flexibility of the two-level system is not required, or where fills are too shallow to accommodate other systems.

General Electric engineers have designed this system for easy installation—box and duct leveling is done quickly with a screw driver . . . slip couplings simplify duct connections . . . and wire pulling is a fast job because the galvanized ducts have smooth, organic-coated interior surfaces.

The standard-size steel ducts (3.357 sq. inches) provide adequate feeding and distribution capacity. Single, double, or triple runs of duct can be used according to the number of services needed.

All three General Electric steel underfloor wiring systems are listed by Underwriters' Laboratories, Inc.

When to Use the G-E Single-level System

Consider these factors before choosing an underfloor wiring system for your next project: a. Can a standard floor layout handle feeding and distribution? b. Is the floor fill less than 3½ inches? c. Can a single-level system fulfill future wiring requirements?

If so, you should consider this new General Electric single-level steel system. But, if you have other power requirements, find out about G-E cellular-steel floor and two-level systems. Whatever your needs, General Electric's experience and complete product line can provide your best answer. Call your nearest General Electric Construction Materials district office or write Section C77-1068, Construction Materials Division, General Electric Co., Bridgeport 2, Conn.

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DOES THE ROOF INSULATION YOU SPECIFY MEET THESE 10 BASIC REQUIREMENTS?

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8. Permanent, efficient insulation
9. Over 30 years job-proved service
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IT WILL IF YOU SPECIFY JOB-PROVED CELOTEX BRAND ROOF INSULATION BOARD

You get the "BASIC 10" requirements when you specify the CELOTEX brand . . . assurance of job-proved performance . . . and then some! You know what to expect of Celotex Roof Insulation . . . not how it SHOULD, but how it DOES perform. That's what we mean when we say Celotex is "PERFORMANCE-PREDICTABLE!"

AVAILABLE IN 3 TYPES

Dependable "REGULAR" . . . asphalt-coated "PRESEAL" . . . and exclusive "CHANNEL-SEAL" . . . all 3 in a variety of thicknesses.

CELOTEX
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THE NEW ADMINISTRATION AND MORTUARY BUILDINGS OF ROSE HILLS MEMORIAL PARK SHOW

How copper alloys lend warmth and

THE NEW ADMINISTRATION and Mortuary Buildings, Rose Hills Memorial Park, Whittier, Calif. Architects and Engineers: Albert C. Martin & Associates, Los Angeles. General Contractor: L. E. Dixon Company, San Gabriel. Ornamental Bronze Fabricator: A. J. Bayer Company, Los Angeles.

GENERAL VIEW of the front of the building. Extruded shapes of Anaconda Architectural Bronze were used for the decorative and functional louvers covering the second floor at the right in illustration above (see detail on facing page). The metal fascia is Anaconda Red Brass.

DECORATIVE TINTED GLASS panel framed with Anaconda Red Brass Rectangular Tube. Vertical tubes, 3¼" x 6½" x 3/32" wall thickness, reinforced with a 6" structural steel channel. Top and bottom cross members, 3" x 1½" x 3/32" tubes. Intermediate dividers, Red Brass Strip. (See details A, B, C.)

THE WARM COLOR OF an Extruded Bronze Shape for the handrail, combined with Red Brass Rectangular Tubes for the railing of this open stairway, provides a pleasing contrast with the surrounding masonry, wood paneling and living plants of the indoor tropical garden.

color to fine contemporary design

"The use and appeal of bronze is historic," says Albert C. Martin, Jr., of Albert C. Martin & Associates, Los Angeles, architects of Rose Hills Memorial Park Administration and Mortuary Buildings. "The architect who molds its traditional character into his design achieves an element of strength, overlaid with the mellowing patina of time."

Architectural Bronze and complementary copper alloys give zest to the architectural composition and enhance the beauty of other building materials whether they be stone, glass, or other metals. The architect will find that copper alloys in extrusions, drawn shapes and sheets offer almost unlimited opportunities in design and color effects.

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As a leader and pioneer in producing extrusions and other forms of copper alloy metals for architectural applications, The American Brass Company has the experience to help you achieve outstanding designs in Copper, Red Brass, Architectural Bronze, Yellow Brass and Nickel Silver. For further information write: Architectural Service, The American Brass Company, Waterbury 20, Conn. 5751

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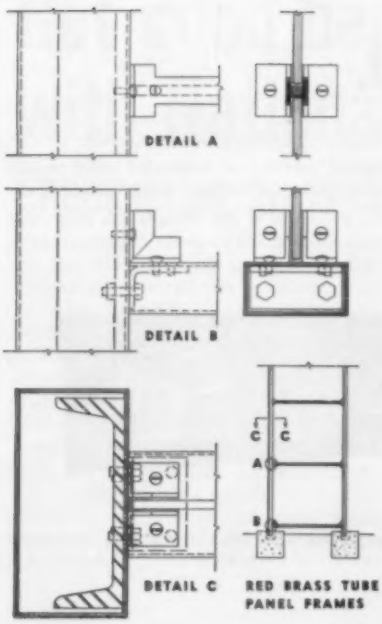
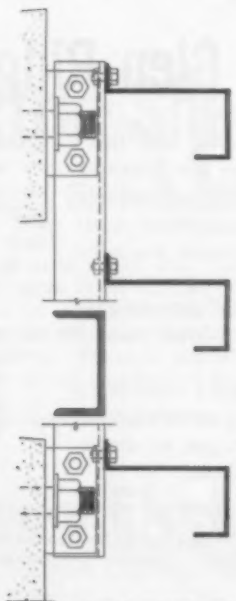
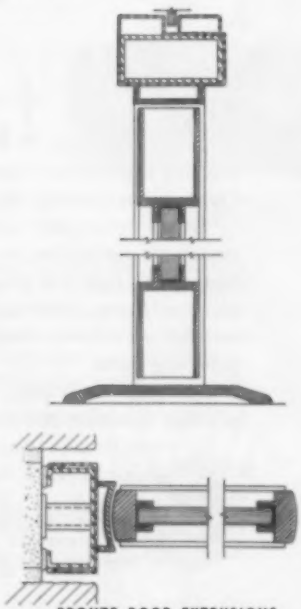
CURVED SECTION OF JAMBS and the stiles, rails, push bars and thresholds of exterior doors are bronze extrusions. (See detail below.)



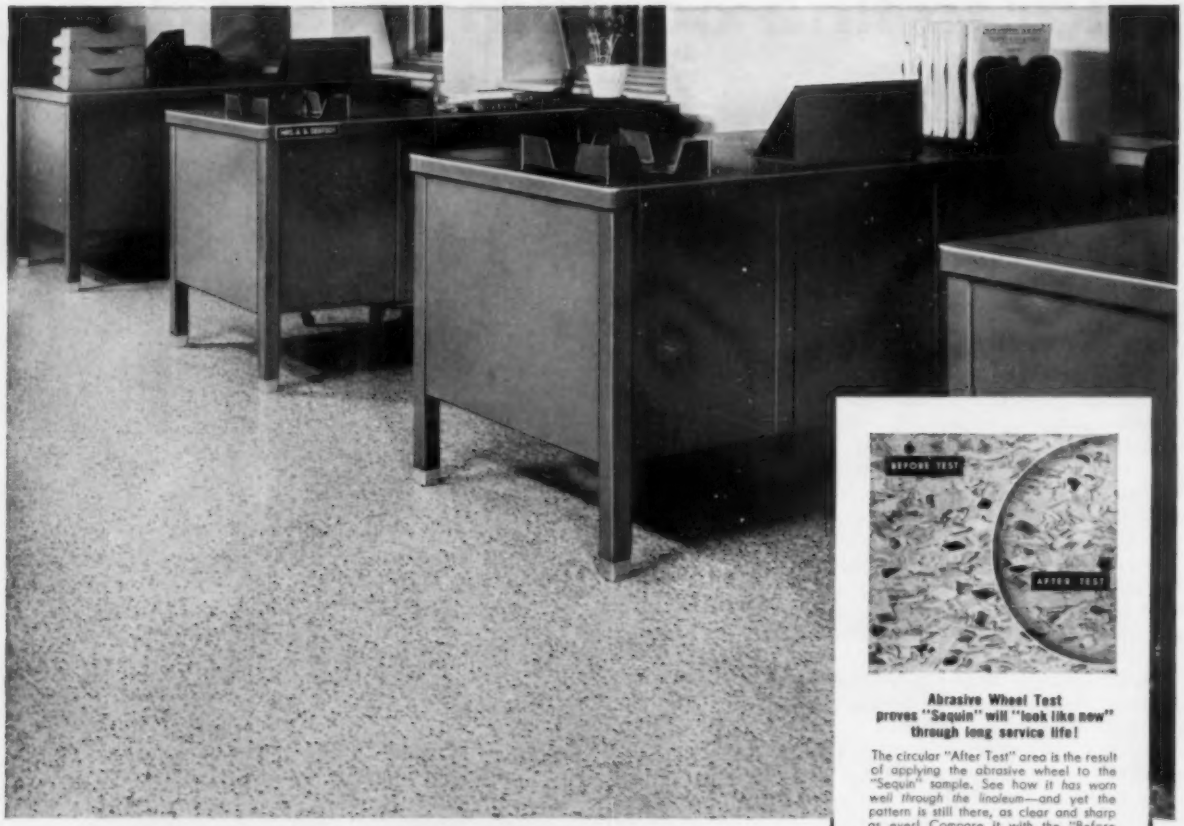
RED BRASS TUBE PANEL FRAMES



EXTRUDED BRONZE LOUVERS



BRONZE DOOR EXTRUSIONS



New Jersey Bell Telephone Company uses rugged "Sequin" in its busy new office in Glen Ridge. This beautiful floor provides quiet comfort underfoot and outstanding wear resistance.

Abrasive Wheel Test proves "Sequin" will "look like new" through long service life!

The circular "After Test" area is the result of applying the abrasive wheel to the "Sequin" sample. See how *it has worn well through the linoleum*—and yet the pattern is still there, as clear and sharp as ever! Compare it with the "Before Test" area. *You can't tell the difference!* For information, write to Architects Service Dept., Congoleum-Nairn Inc., Kearny, N. J.

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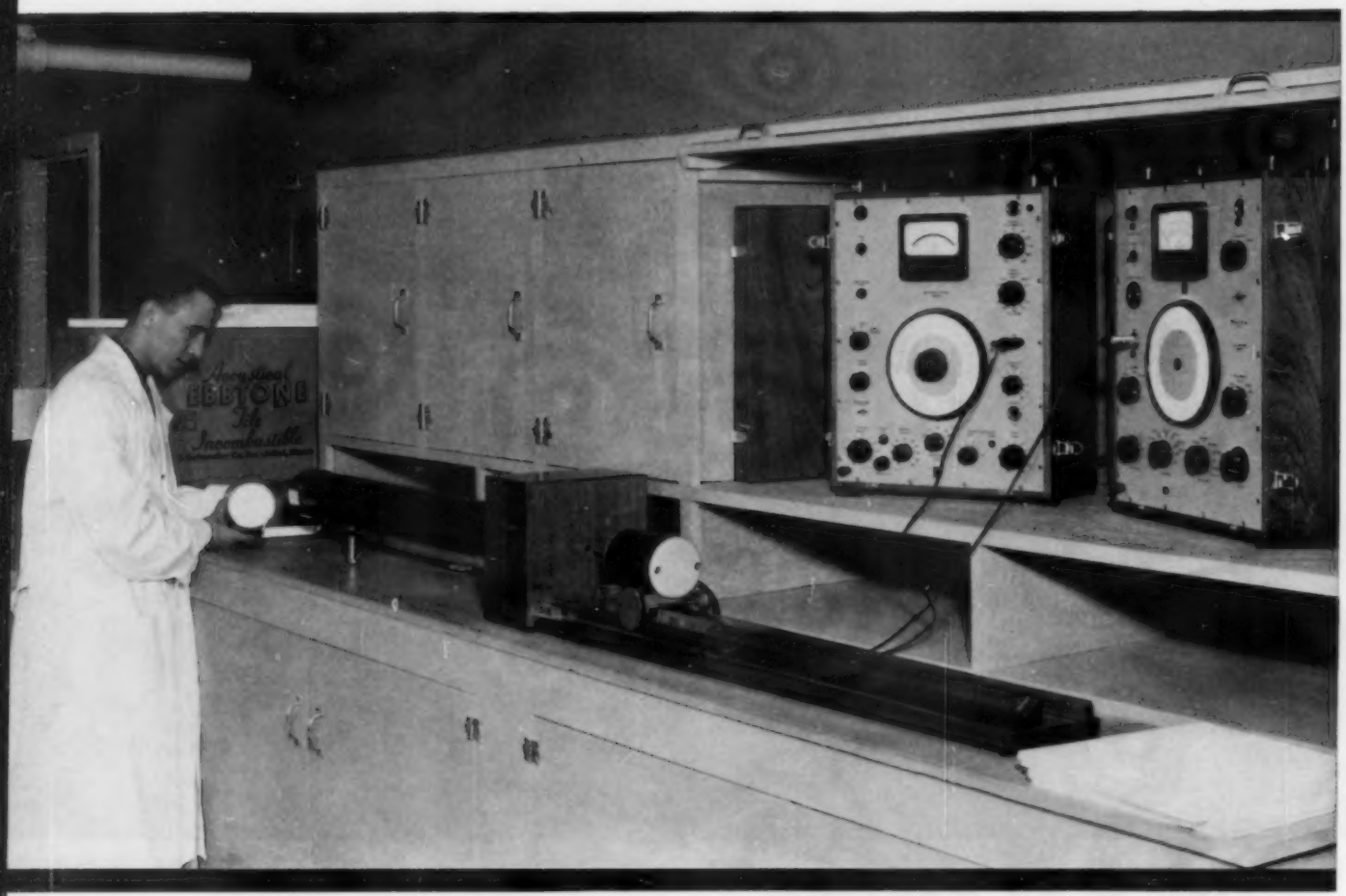


NRC DATA ON SCHUNDLER ACOUSTICAL AND INSULATING PRODUCTS

NRC DATA — CORALUX ACOUSTICAL PLASTER

Frequency	128	256	512	1024	2048	4096
Coefficients*	.33	.19	.41	.78	.74	.87

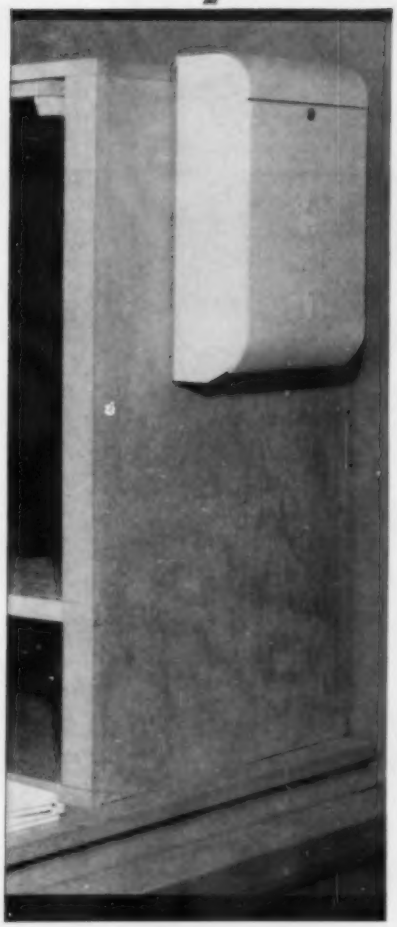
Noise Coefficient .55. *As determined by a nationally known laboratory.

NRC DATA — EBBTONE ACOUSTICAL TILE

Test Number	Unit Size Tested	Wgt. Lbs. Per Sq. Ft.	Surface	Thick-ness	Mount-ing	Coefficients						Noise Reduction Coef**
						125	250	500	1000	2000	4000	
A56-251	12" x 12"	1.2	Striated White	¾"	7	.62	.69	.64	.72	.83	.86	.70
A56-252	12" x 12"	1.2	Grained White	¾"	1	.19	.28	.67	.86	.76	.73	.65
A55-296	12" x 12"	1.22	Textured White	¾"	7	.57	.58	.60	.70	.86	.86	.70
A56-17	12" x 12"	1.28	Textured White	¾"	1	.10	.34	.68	.87	.79	.83	.65

**This noise reduction coefficient is the average of the coefficients at frequencies from 250 to 2000 cycles inclusive, given to the nearest 5%. This average coefficient is recommended for use in comparing materials to be applied in offices, hospitals, banks, corridors, etc.

a mouse?



Bit by bit acoustical fancy gives way to acoustical fact. We know, for example, that it takes more than a ceiling to put a ceiling on noise. We know that room shapes can pull the rug from under the thick carpet theory. And we know that you can have *too much* sound control. In a quiet-as-a-mouse (or a sone) executive office where you can hear a pin drop you can also hear a head fall.

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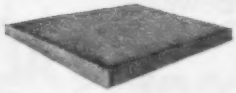

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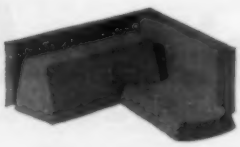

153 High Temperature Insulation Blocks

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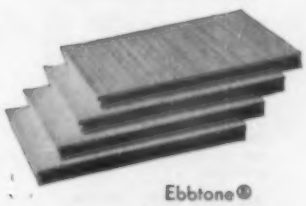

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Construction of the suspended ceiling is interesting. Due to the spans involved, Penmetal LIGHTSTEEL structural channels were suspended from roof members by double-bolted strap hangers with special stirrups designed by Berti Plastering Company. Furring was attached to these channels and MESHTEX lath, in turn, wired to the furring—then plaster was applied.

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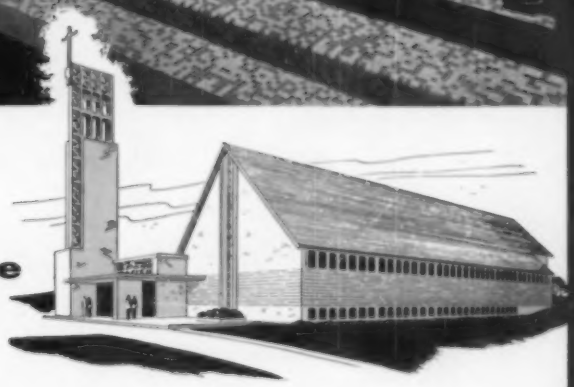
Penmetal

a name to remember

◀ Lather wire-tying Penmetal MESHTEX lath to ¾" Penmetal furring channel. Penmetal LIGHTSTEEL, 6" unpunched structural channels, spaced 4 feet o.c., can be seen above. Penmetal partition studs, at right, were used for curtain walls.

First Methodist Church, Hopkins, Minn.
Architects: Armstrong & Schlichting, Minneapolis, Minn.
Tile Contractor: Drake Tile Co., Minneapolis, Minn.



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Simplicity of line and imaginative blending of textures and color keynote the warm, friendly interior of the new First Methodist Church in Hopkins, Minnesota. To help achieve this dignified, yet colorful effect, the architects chose Romany•Spartan small unit tile in subdued colors—plain for chancel floor and random pattern for sanctuary.

No matter what your problem, indoors or out, there's a Romany•Spartan tile to create exactly the right mood or effect. Be sure you're familiar with the complete line. If you'd like design help or more information, contact your nearby Romany•Spartan representative or write United States Ceramic Tile Company, Department P-14, Canton 2, Ohio.

UNITED STATES CERAMIC TILE COMPANY • THE SPARTA CERAMIC COMPANY

ASK THE AEROFIN MAN

For the Practical Answer to Your Heat-Exchange Problem . . .

Aerofin is sold only by manufacturers of nationally advertised fan system apparatus. List on request.

There is a competent Aerofin heat-transfer engineer near you, qualified by intensive training and long experience to find the *right* answer to your own particular heat-exchange problem.

This specialized knowledge is there, ready for you to use to your greatest advantage. Ask the Aerofin man — and be right.

AEROFIN CORPORATION
101 Greenway Ave., Syracuse 3, N. Y.

HANLEY BRICK

FROM CLAY

...TO KILN

...TO COLOR

Hanley Yellow Sapphire
Duramic Brick No. 722

HANLEY Quality is unique and outstanding. It is achieved by rigid, scientific Quality Control, maintained from Clay to Kiln to Beautiful Color. Hanley possesses one of the nation's best shale deposits, but top grade raw material is merely the first step in Hanley Quality. Hanley's patented tunnel kilns provide constant color and quality control, and are your assurance of bricks that meet the most strict requirements.

HANLEY COMPANY

PITTSBURGH: One Gateway Center
DETROIT: 14976 Schaefer Highway
NEW YORK: 101 Park Avenue
BUFFALO: 625 Delaware Ave.

Color telephones displayed in the model home of Mr. Hadley's Parkway Manor tract favorably impress home buyers, point up attractiveness of concealed telephone wiring. Here Mr. Hadley (right) discusses the location of a display telephone with Thomas A. Williams of New Jersey Bell Telephone Company.

"Planned telephone outlets make sense to home buyers"

— says Mr. Charles F. Hadley, Builder, Cape May Court House, New Jersey

"Telephones have become an absolute necessity," says Mr. Hadley, "and today a builder has to provide for them during construction. I put several telephone outlets in every house I build —in the kitchen, in each bedroom, and in the living areas. I don't want my houses to be obsolete or old-fashioned before they're even on the market.

"Planned telephone outlets make sense to home buyers, and what makes sense to a buyer helps sell him. Conveniently placed outlets, plus the fact that telephone wires are concealed in the walls, add greatly to the attractiveness of a house. There's no question in my mind but that planned telephone outlets are important selling points."

• • •

Your local Bell Telephone business office will be glad to help you with concealed wiring plans. For details on home telephone wiring, see Sweet's Light Construction File, 8i/Be. For commercial installations, Sweet's Architectural File, 32a/Be.

Working together to bring people together

BELL TELEPHONE SYSTEM

Some insulations
can't carry a load . . .

FOAMGLAS®
INSULATION
is strongest!

—the compressive strength of inorganic FOAMGLAS is 7 tons/sq.ft., and it's dimensionally stable . . . waterproof and vapor-proof . . . can't burn . . . vermin-proof . . . easy, economical to handle and install. Write for detailed literature.

Pittsburgh Corning Corporation
Dept. AB-107, One Gateway Center, Pittsburgh 22, Pa.
In Canada: 57 Bloor Street West, Toronto, Ontario

NEW Suntile
INSTALLS CLEAN AND EASY
Cuts Installation

A tremendous forward step for ceramic tile—with benefits to architect, contractor, and buyer!

Suntile SETFAST Wall Tile is the most modern, strongest and fastest method of installing tile.

It's economical. SETFAST fits Suntile to modest budgets. No need to use substitutes.

Suntile SETFAST Wall Tile

... pre-bonded on durable fiber that strengthens tile-to-wall bond like the ribs in reinforced concrete . . . and provides an additional safety factor for vibration, structural shifts and temperature changes!

In 16 most popular colors.

SETFAST* Wall Tile WITH STRONGEST BOND

Time and Costs

FAST INSTALLATION — Ideally suited for thin-set installation method using either an approved adhesive or self-curing mortar. Where necessary SETFAST may be installed over mortar beds of conventional thickness. No soaking required!

MODERN ECONOMY — 12-tile, factory inspected units cover 1½ sq. ft. Individual operations reduced.

PERFECT SPACING — beautifully precise, automatic alignment and easy handling. SETFAST Wall Tile conforms perfectly to minor irregularities in existing wall surface!

Suntile SETFAST Ceramics

— in one-by-two foot sheets offer you design versatility with unheard of economy!

Mechanic sets 288 one-by-one inch ceramics at once, perfectly bonded and spaced. He can inspect his work, avoid error, because he installs ceramics *face up.*

No paper to soak off, no mess to clean. Tile can be grouted immediately!

SETFAST ceramic patterns encourage originality in floor and wall design — patterns, geometrics, abstracts, and randoms.

Available from stock, *including the famous, exclusive Max Spivak motifs!* Send for catalog.

CAN OUR SPECIAL DESIGN STAFF HELP YOU?

Our ceramic artists, headed by Harry J. Macke, will be glad to suggest tile applications to your plans or elevations; or put your own tile designs in layout form.

*Patent Pending

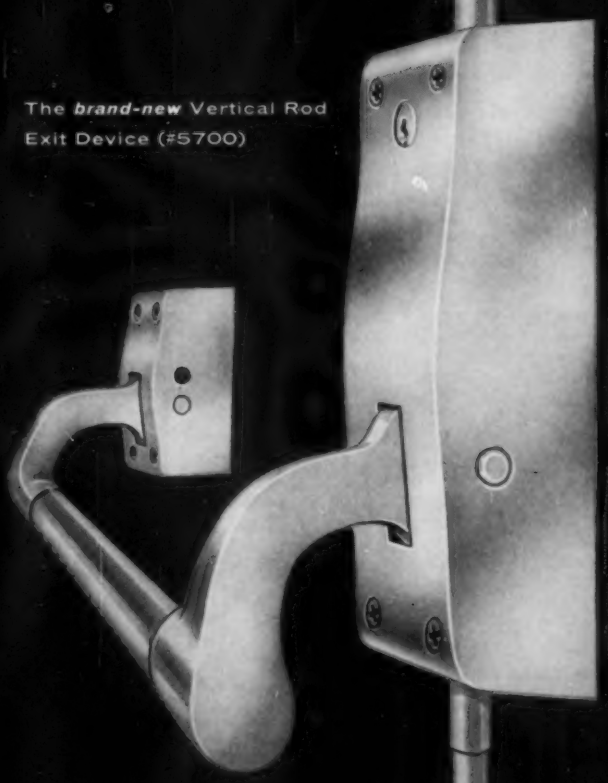
THE CAMBRIDGE TILE MFG. CO.

Dept. PA-107, P.O. Box 71, Cincinnati 15, Ohio

Sargent's new line of

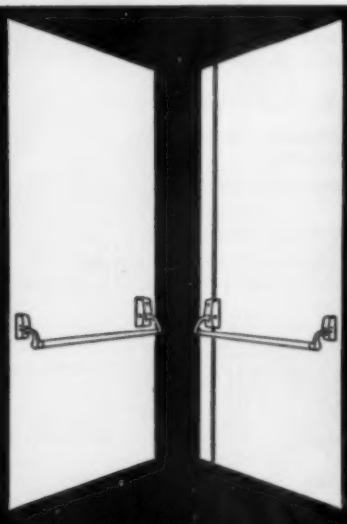
The ***standard*** Rim Lock
Exit Device (#5800)

The ***brand-new*** Vertical Rod
Exit Device (#5700)



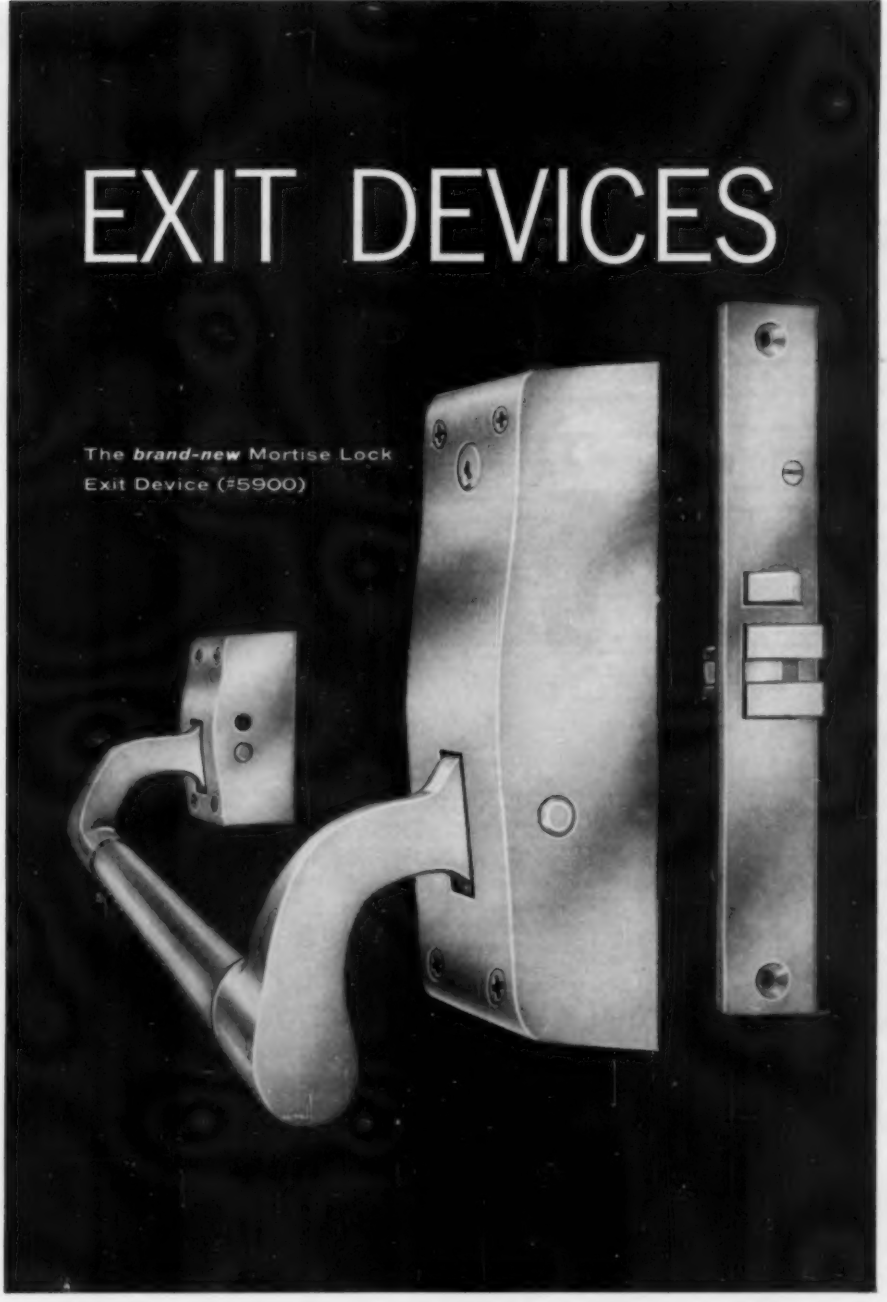
These designs conform to the following federal specifications:
Rim Bolts 810H, 810; Mortise Bolts 820H, 820; Vertical Rod 821.

Single door with
Sargent's simple,
sturdy Rim Lock
Exit Device

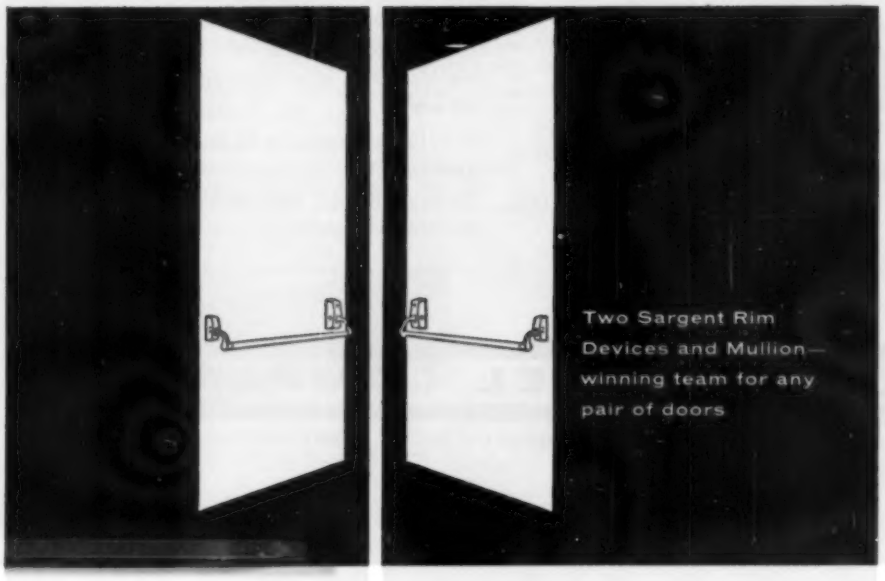


Free-swinging Sargent
Vertical Rod and
Mortise combination
for double doors

EXIT DEVICES



The ***brand-new*** Mortise Lock Exit Device (#5900)



Two Sargent Rim Devices and Mullion—winning team for any pair of doors

Now you can plan safer quick-exit doors for any building... with all these Sargent designs...

2 all-new designs . . . the *Vertical Rod Exit Device* with simpler, surer gravity action . . . the *Mortise Lock Exit Device* with fast, precise anti-friction design . . . both *new* for *you* from Sargent!

These . . . plus the popular *Rim Lock Exit Device* with only *two* moving parts . . . help make Sargent the most complete, up-to-the-minute line of exit devices anywhere!

Open and close at the lightest touch— no other exit device works easier... smoother... faster!

Rugged, long-lasting construction . . . with stainless steel springs and pivot pins. Flawlessly designed cases . . . never any finger pinching.

Whatever your requirements—specify these exit devices—alone or in combination—for unequalled efficiency and economy. They have 5 smart outside-handle styles. And they readily harmonize with other Sargent hardware.

Choose from bronze, brass, or chrome. Order through your supplier or write direct. The reasonable cost will please you. *Sargent & Company, New Haven 9, Conn., Dept. 15-K.*

SARGENT Builders' Hardware

"...sign of long-lasting construction"

SARGENT *of New Haven*

Insure Better Construction

with LACLEDE open web steel joists

Engineering design and performance characteristics, necessary to insure dependable load bearing ability, are inherent in every Laclede open web Steel Joist because they're manufactured under the rigid Quality Verification Program of the Steel Joist Institute.

...approved by the
STEEL JOIST INSTITUTE

SJI APPROVAL is your assurance of uniformly high quality... in every Laclede Joist you install ... a real contributing factor to the over-all success of your construction work.

Write for your copies of the latest Steel Joist Institute literature—"Bridging Report" and Quality Verification Program.

STEEL JOIST INSTITUTE MEMBER SJI

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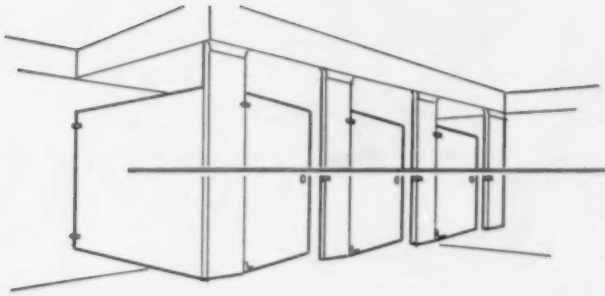
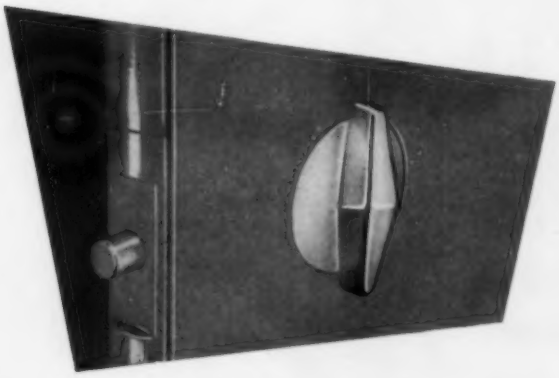
LACLEDE STEEL COMPANY

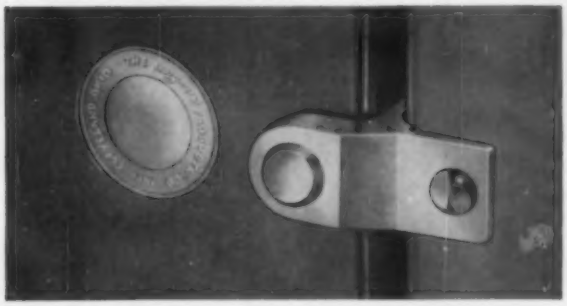
SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction



This is where Sanymetal now offers you *another first* in styling, value, engineering...it's the NEW *Sanymetal* 8800 *concealed* LATCH



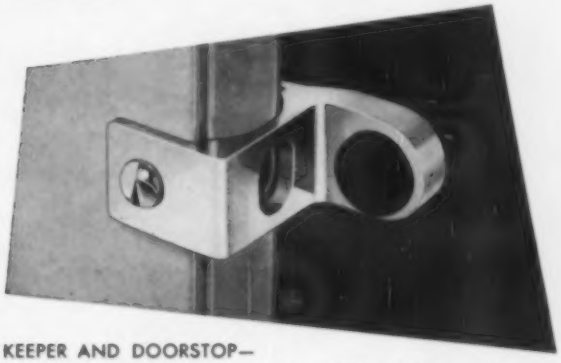
CONCEALED LATCH ASSEMBLY— mechanism is concealed within the door, has mortised face plate, stainless steel bolt. Flush-mounted, finger-tip-control latch handle has back set of 2¾". Escutcheon and latch made forever theft-proof without the use of nuts or bolts.



VIEW FROM OUTSIDE OF THE COMPARTMENT — the handsome escutcheon plate is flush with the door. Exposed parts, made of strong non-ferrous castings heavily chrome-plated, will keep their beautiful lustre for the life of the compartment.

SEEN FROM INSIDE OF COMPARTMENT — latch presents smooth flush lines and minimum projections. Latch handle operates with smooth cam action, has no springs; (tested to 300,000 cycles of operation without noticeable wear).

Write for Sanymetal 8800 Concealed Latch brochure, now being prepared, and for Catalog 94, which gives other important details of quality toilet compartment construction.

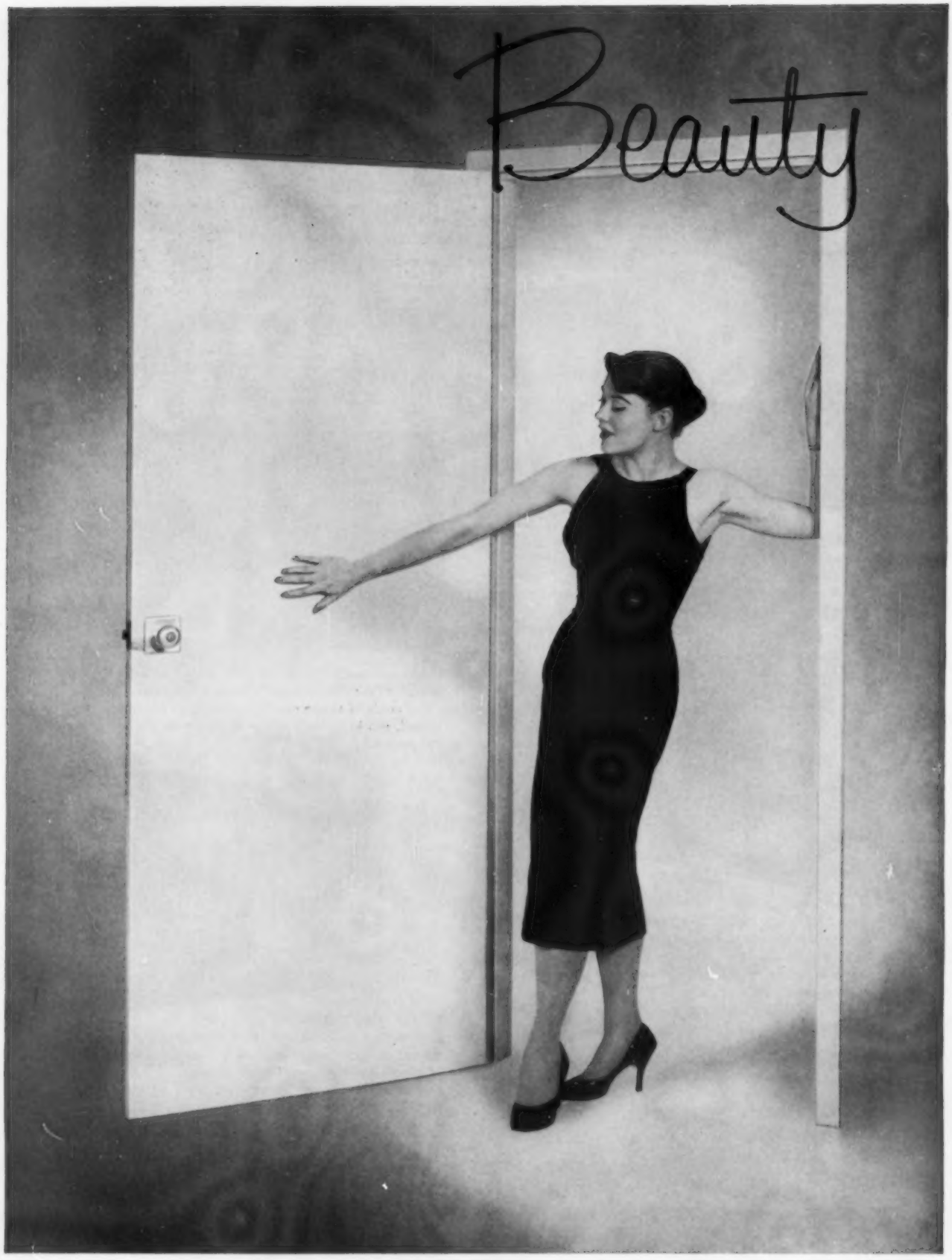


KEEPER AND DOORSTOP—
of universal design, for in- or out-swinging, left or right doors. Keeper quickly applied with one theft-proof bolt, aligning positively without adjustment. Full ¾" rubber bumper held with concealed theft-proof device absorbs closing shock without vibration.

LOOK FOR THIS

NAMEPLATE
WHICH IDENTIFIES EVERY
SANYMETAL INSTALLATION.

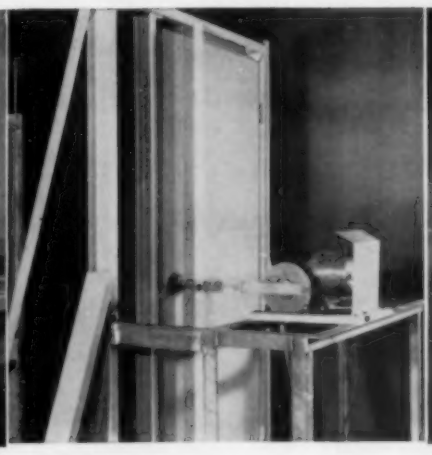
Sanymetal®
PRODUCTS COMPANY, INC.
1683 Urbana Road, Cleveland 12, Ohio
6433-J E. Canning St., Los Angeles 22, Calif.


Beauty

and the Beasts

Twist!

Here the "beast" (a jack) forces one corner of the door off the table until the insides begin to snap. The Fenestra Door took 240 lbs. of twisting pressure without damage! One *competitive* door snapped at 90 lbs., another at 130.



Slam!

Here the "beast" (a door slamming machine) has already slammed the Fenestra Door 382,000 times! No damage to door or hinges. *Competitive* doors shook loose hours before.

Bang!

Here the "beast" (a pendulum weight with a force equal to 1200 inch-pounds) crashed against this door 1000 times without even leaving a *mark!* One *competitive* door gave way after 50 blows, another after 100.

New Fenestra 1⅜" Hollow Metal Flush Doors outlast all others in torture tests!

Beneath the sleek "seamless" beauty of the new 1⅜" Fenestra® Hollow Metal Flush Door is a rigid, rugged structure that withstood the toughest torture tests shown here.

This strength comes from Fenestra's exclusive multi-rib reinforcement.

And here are three other important extras:

1. You buy a *complete package:* door, frame, hardware. All fitted at the factory for fast, economical erection.

2. Fenestra's famous Lock Miter joint frames provide extra strength and smooth finished appearance.

3. You buy these custom-quality doors at *stock* prices. Fast delivery is standard.

Call your local Fenestra representative—listed in the Yellow Pages—or mail the coupon below for complete information.

Fenestra
INCORPORATED

HOLLOW METAL
DOOR-FRAME-
HARDWARE UNITS

YOUR SINGLE SOURCE OF SUPPLY FOR DOORS · WINDOWS · BUILDING PANELS

Fenestra Incorporated
Dept. PA-10, 3409 Griffin Street
Detroit 11, Michigan
Please send me complete information on New Fenestra 1⅜" Hollow Metal Flush Door-Frame-Hardware Units.

NAME_____

FIRM_____

ADDRESS_____

CITY_____ STATE_____

Fenestra
SCHOOL DESIGN NEWS

"Fenestra Steel Windows' *No Painting* feature alone saved us $500 in only two years"

. . . says Riverside School Staff

Principal*: "We are more than pleased with our Fenestra® Intermediate Steel Windows. No maintenance work on them has been required in the two years we have occupied Riverside, nor have they warped or jammed.

"Keeping Fenestra Windows clean is an inside job all the way. Our maintenance man is able to wash the windowpanes inside and out while standing inside the school building. Windows are washed and polished 35% quicker.

"Lack of corrosion, alone, has saved us approximately $500.00 because, normally, windows have to be painted every two years. There is no indication that the windows will require painting in the near future.

"It is significant to us that the architect who designed our building has planned 14 others and specified Fenestra Steel Windows for all."

Teacher*: "The windows in my classroom operate as easily now as they did two years ago. Opening and closing them is so easy, even the smallest of our students can handle them."

Librarian*: "We are especially impressed with the excellent ventilation we're getting. Each window remains open at the angle selected—can be readily adjusted to regulate the amount of air entering the room, and will not slip out of position."

Fenestra Intermediate Steel Windows provide *more* and *better daylight* for school classrooms. Their slim, but strong, steel sections give you *more glass area* and *clear-vision view* per window opening. Fenestra Windows are engineered and precision built to be rigid and rugged without excess bulk. Sturdy hardware and steel-strong window members assure years of trouble-free service. Cleaning and screening are done safely and economically from the *inside!*

NEW FENESTRA *FENLITE* FINISH

Fenestra Intermediate Windows are now available with the New FENLITE Finish that gives longer window life *without painting* plus a distinctive window beauty. The FENLITE process is an exclusive Fenestra development based on years of experience and research with corrosion-resistant finishes for steel windows. It saves the cost of maintenance painting year after year.

For modern window beauty, for more daylighting and better ventilation, specify Fenestra Intermediate Steel Windows. Mail coupon, today, for complete information or call your local Fenestra representative —listed in the Yellow Pages.

*Names upon request.

Riverside Elementary & High School, Pendleton, South Carolina, an outstanding example of modern, split-level school design. Contains 38,360 square feet. Capacity: 500 students. 170 Fenestra Intermediate Steel Windows, with their slim, steel members, contribute to the building's architectural beauty, give classrooms better daylighting and ventilation. **Architect:** John M. Lambert, Jr., A.I.A., Anderson, S. C. **Contractor:** Triangle Construction Co., Greenville, S. C.

Fenestra
INCORPORATED

INTERMEDIATE
STEEL WINDOWS

YOUR SINGLE SOURCE OF SUPPLY FOR
DOORS • WINDOWS • BUILDING PANELS

Fenestra Incorporated
Dept. PA-10, 3409 Griffin Street
Detroit 11, Michigan

Please send me complete information on Fenestra Intermediate Steel Windows for school design and construction.

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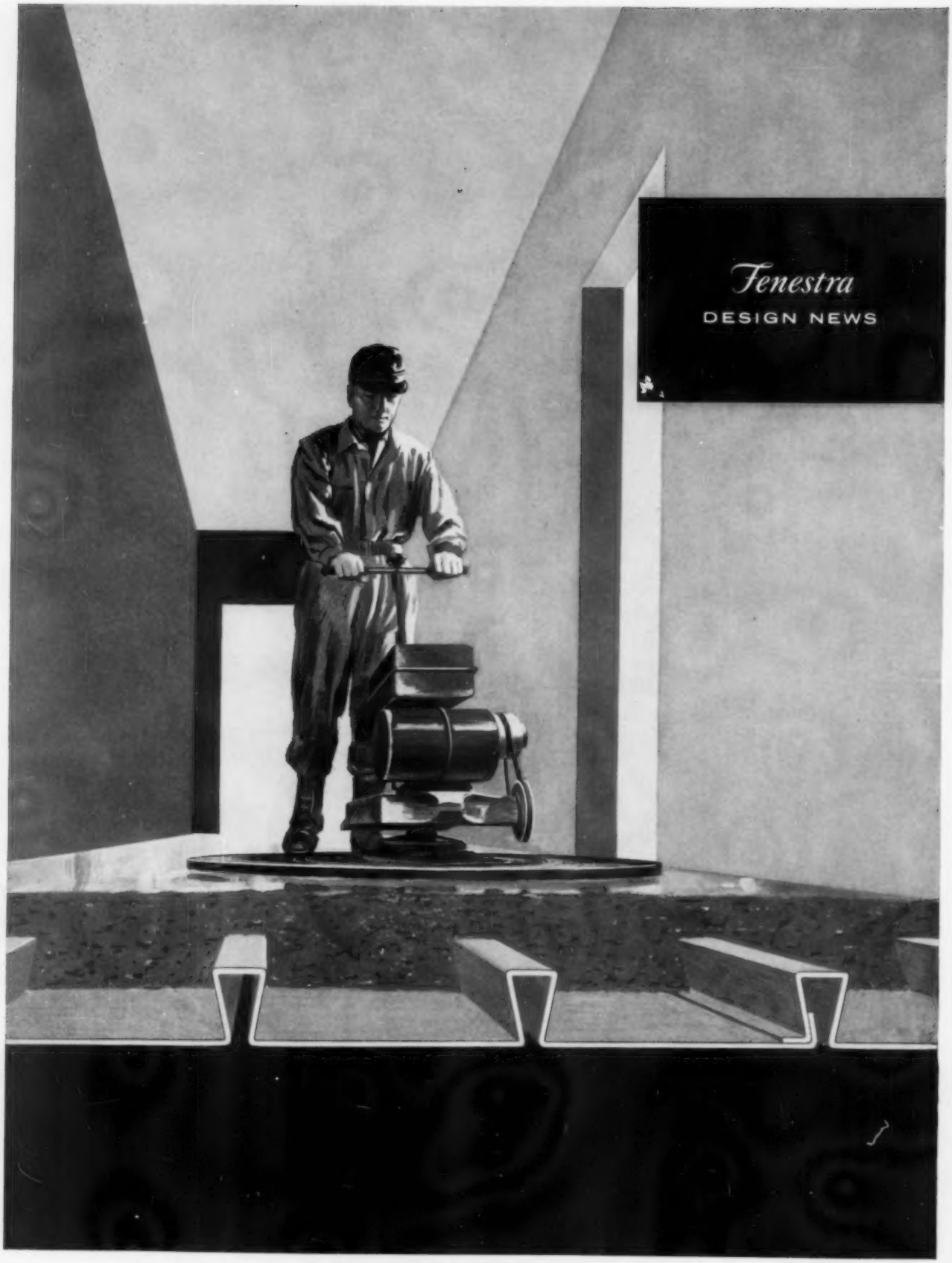
CITY_____ ZONE____ STATE_____


Fenestra
DESIGN NEWS

Arizona Land Title & Trust Co. Building, Tucson, Arizona, is now under construction using 95,000 sq. ft. of Fenestra Holorib Reinforcing Forms.

Architects: Place & Place, Tucson, Arizona

Contractor: James Stewart Co., Tucson, Arizona

How Fenestra Holorib Reinforcing Forms

SAVE TIME AND MONEY ON CONCRETE CONSTRUCTION

For concrete slab construction, Fenestra* Holorib Reinforcing Forms speed up your building, reduce fire hazards and save money on reinforcing steel. This multi-purpose building product gives you three important advantages.

First, it is quickly and easily erected for the entire structure as soon as the steel framework is in place. It gives you immediate working platforms and protective staging for all trades. You reduce fire hazards during building because Fenestra Holorib Reinforcing Forms are completely incombustible. No shoring is required for 8-foot spans and shoring at mid-span only for longer spans and deeper slabs.

Second, Holorib Forms on typical spans provide all the structural reinforcing needed, eliminating the cost and placing time of reinforcing rods. The unique pyramidal ribs key into the concrete for a positive mechanical bond combined with a chemical bond between the galvanized steel and concrete. For example, a floor slab only 3 inches thick with Holorib Reinforcing will carry up to 120 pounds per square foot live load on a 10-foot span.

Third, the tight joints of Holorib Reinforcing Forms reduce concrete dripping to lower floors and save time and money on cleanup. Finish ceilings or service fixtures are easily attached into the rib slot.

Add up your savings on labor and materials plus faster completion and shallower floor depth. Compare them with the reasonable cost of Holorib Reinforcing Forms. You can see that this is the most economical system for reinforced concrete slab construction. Let your local Fenestra representative show you how much you can save on your next job. Call him, today—listed in the Yellow Pages—or mail the coupon below for your FREE copy of the 1957 *Fenestra Building Panel Catalog* containing complete information.

*Trademark

Fenestra INCORPORATED | HOLORIB REINFORCING FORMS

Your Single Source of Supply for
BUILDING PANELS • DOORS • WINDOWS

Fenestra Incorporated
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Detroit 11, Michigan
Please send me complete information on Fenestra Holorib Reinforcing Forms for concrete construction.

NAME_____

FIRM_____

ADDRESS_____

CITY_____ STATE_____

OFFICE BUILDING
TAMPA, FLORIDA
Richard S. Himes and McAllister Blanton—*Architects*
Rañon and Jimenez—*Builders*
Jim Walter Corporation—*Owner*
Facing units 24" x 24" are adhesion-type Ceramic Veneer, 1¼" thick. Color is tan-mottled cream.

There's always the right color to complement your design when you specify Ceramic Veneer

Your choice of color and texture—creative stimulants to true architectural expression—need never be narrowed when Ceramic Veneer enters your plans. Whether you specify plain surfaces, polychrome panels or sculpture—for exteriors or interiors—every unit, large or small, is custom-made by Federal Seaboard. The result is a time-tested building material produced precisely to your specifications in one or more colors selected from a range which rivals the imagination. Ceramic Veneer's remarkable versatility in form, color and texture explains why it is used so widely today. Besides versatility, it also provides the advantages of quality, permanence, price and minimum maintenance. For all the latest facts on Ceramic Veneer, the modern architectural terra cotta, write to us today. Without charge we will gladly furnish construction detail, data, color samples and advice on preliminary sketches.

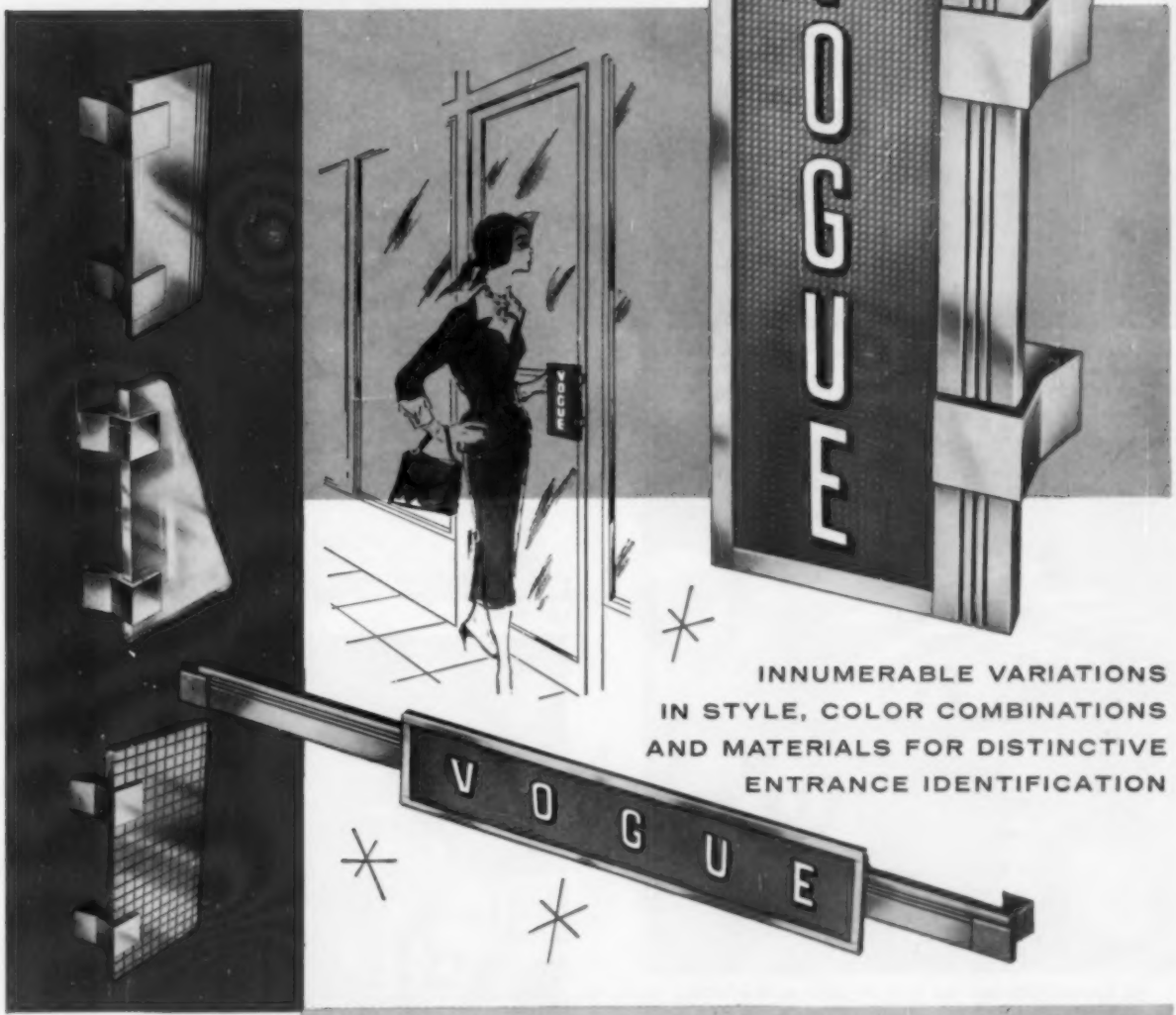
F S T C

FEDERAL SEABOARD TERRA COTTA CORPORATION
10 East 40th Street, New York 16, N.Y. • Plant at Perth Amboy, New Jersey

Personalized

HARDWARE for BRASCO ENTRANCES

NEW "600" SERIES



INNUMERABLE VARIATIONS
IN STYLE, COLOR COMBINATIONS
AND MATERIALS FOR DISTINCTIVE
ENTRANCE IDENTIFICATION

Write Dept. P710 for "600 Series" Descriptive Folder

Brasco MANUFACTURING CO. · HARVEY, ILL.

STORE FRONTS · ENTRANCES · BRASCO WALL

1. GENERAL OFFICE AREA in a new administration building makes extensive use of panels of Pattern No. 70 with luminous element. Illumination is glare-free and pleasing to the eye.

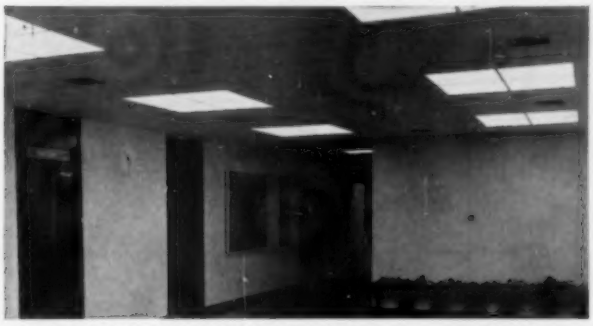
Only you would

2. LABORATORY gets the kind of low surface brightness required for close work with these suspended troffers. Main panels are Pattern No. 70; sides of Alba-Lite provide excellent diffusion. Suspended troffers also permit fitting lighting fixtures around needed venting apparatus.

3. CONFERENCE ROOM in recently erected building to house an advertising agency uses PYREX® lenslites mounted in free-form wood unit of custom design and fabrication.

4. FLUSH troffers using Pattern No. 70 bathe secretarial work area in soft, glare-free light. Ceiling mounts like this add to neat looks of office, minimize maintenance and cleaning problems.

5. FOTA-LITE provides subdued but highly efficient illumination for a top executive's office. This glass combines the advantages of smooth sheet glass with the control afforded by louvers.



6. GOOD LOOKS and adequate illumination are provided by these Square Alba-Lite Bowls mounted flush in lobby ceiling. Diffusing property of this glass obscures fluorescent elements.

7. END-TO-END troffers attached to ceiling have main panels of Pattern No. 70 with Alba-Lite side elements. This arrangement provides optimum light and service conditions for new office in a large printing establishment.

look UP in any of these 7 settings!

What's the best test of the effectiveness of any lighting system?

Quite probably it's the number of people who don't look up. The reason is simple: *When illumination is adequate, pleasant, unobtrusive, there's little reason to examine its source.*

Except, of course, from your standpoint.

And for *you* Corning makes the kind of lightingware that provides the *control* you need to achieve the *effects* you want.

From the situations pictured, you can get an idea of the variety of lighting problems that can be effectively handled with Corning glassware.

Extra value

You'll also find a number of important *bonus* values in lightingware by Corning. It looks good. It comes in many shapes and forms to fit into (*even add to*) every kind of décor and setting.

And your customers get the added advantages of lighting that's readily serviced, easy to keep clean and new-looking, rugged, and long-lasting.

Still more

Corning also makes special lightingware for use in maximum security situations and environments involving adverse conditions like wide temperature fluctuations.

At your fingertips

All the important details of what's available from Corning are summed up in "Commercial Lighting Application Guide." In it you'll find data on types of fixtures, varieties of glassware, suggested applications, in-use photos, and estimating tables. Free with the coupon.

Inquiries about specific problems, glasses and availabilities will receive prompt replies.

CORNING GLASS WORKS
63-10 Crystal Street, Corning, New York

Please send me a copy of "Commercial Lighting Application Guide."

Name..... Title.....

Company.....

Street.....

City..... Zone..... State.....

Corning means research in Glass

CORNING GLASS WORKS, 63-10 Crystal Street, Corning, N. Y.

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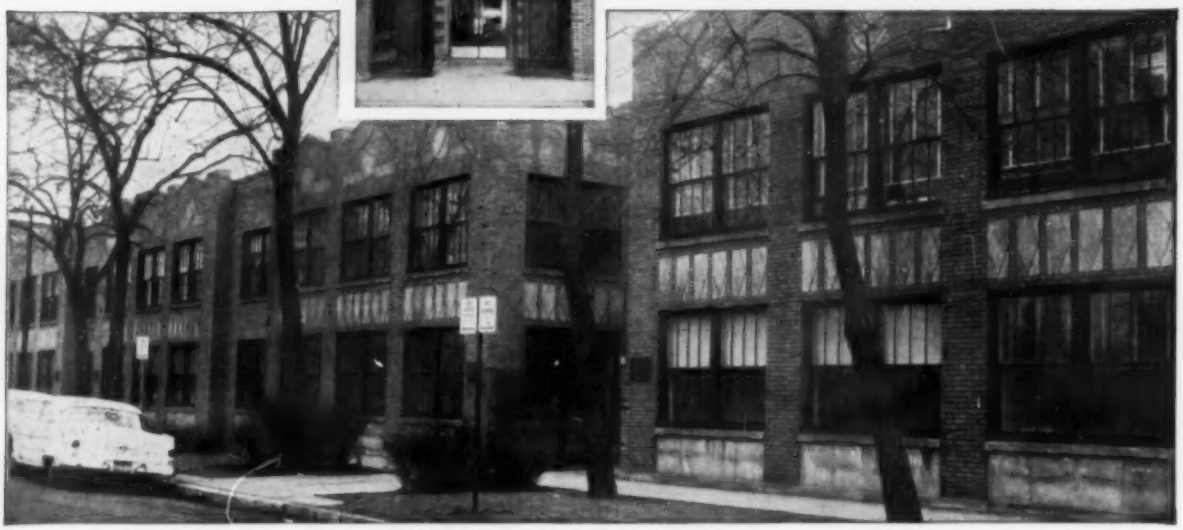
Dartnell Corporation, Chicago publishing house. Modernized with Airtemp air conditioning. **EQUIPMENT:** three 8-ton water-cooled "Packaged" air conditioners. **CONTRACTOR AND CONSULTING ENGINEERS:** Barco Refrigeration & Air Conditioning.



COOL ANY BUILDING...OLD OR NEW...

THE LOW-COST AIRTEMP WAY

Planning to air condition? Save on installation, save on operating costs with *Airtemp* cooling. You get these three advantages—

1 Broadest choice in the industry—287 models! There's an Airtemp model exactly right for your cooling needs and installation problems.

2 Engineered by Chrysler for low monthly operating costs...plus quick, easy, low-cost installation.

3 Installation help! Airtemp will recommend a reliable local engineer and contractor...and work with them in planning your installation.

For a free survey, phone your nearest Airtemp outlet. Or write to Airtemp Division, Chrysler Corp., Dayton 1, Ohio.

AIR CONDITIONING AND HEATING FOR A ROOM, A HOME, A BUSINESS, AN AUTOMOBILE

Airtemp
CONSTRUCTION
DIVISION OF CHRYSLER CORPORATION

NEW WASCOLITE REFLECTADOME* WITH SOLATEX SILVER

the skydome that does all 3 reduces heat . . . eliminates glare . . . controls daylight

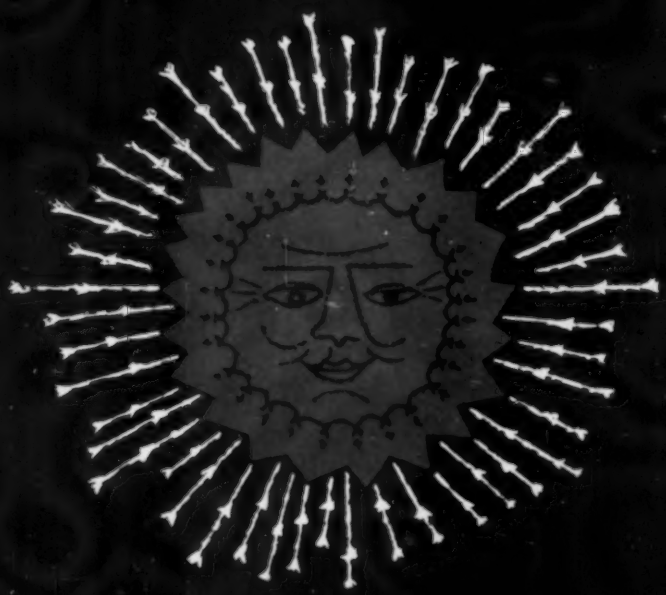
After years of development and research Wasco Products, the company that originated Skydomes, now offers you a revolutionary new overhead daylighting unit. It's Reflectadome, the one dome that reduces objectionable solar heat gain, eliminates glare and controls daylight — without supplementary light control fixtures.

Reflectadome's secret is Solatex Silver, a special material embedded (not laminated) right into the acrylic dome. Reflectadome produces a remarkably level lighting curve to keep interiors evenly illuminated throughout the daylight hours for top visual performance.

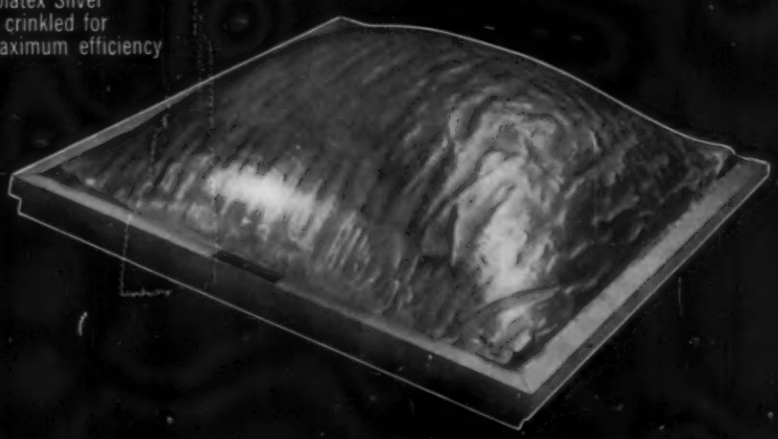
Naturally, Wascolite Reflectadome features all the improved functional advantages of the Wascolite Skydome. Solatex Silver embedments are available only from Wasco, so specify Wascolite Reflectadome by name.

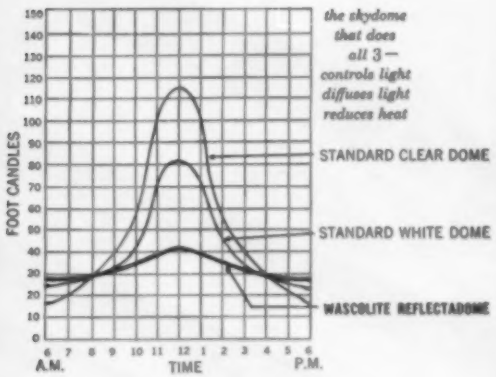
Write immediately for full details on exciting new Reflectadome, the one Skydome that does all 3! — reduces heat . . . eliminates glare . . . controls daylight.

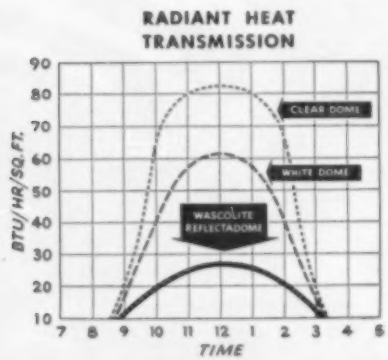
*Trademark of Wasco Products, Inc.



NOTE how Solatex Silver is crinkled for maximum efficiency







WASCO PRODUCTS, INC.

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Two application methods for Insulite Roof Deck in Wantagh Abbey Funeral Home, Wantagh, Long Island, New York. (Above) Vertical application on truss-and-beam framing. (Below) Horizontal application on ridgebeam-and-beam framing. ARCHITECT: George E. Tumey, A.I.A., Wantagh, L. I., New York. BUILDER: Sam Muscara, Bellmore, L. I., New York.

Roof and ceiling costs cut "at least 10% to 15%" by Insulite Roof Deck

Roof Deck gives economy plus beauty and dignity to New York funeral home

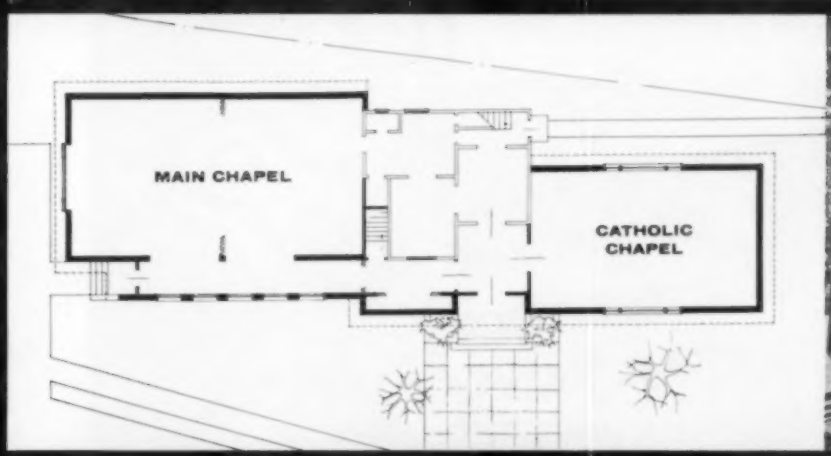
This is the fifth building designed with Insulite Roof Deck by George E. Tumey, A.I.A., of Wantagh, Long Island, New York. The builder reports exceptional speed in the application of Roof Deck, and a saving of "at least 10% to 15%" on roof and ceiling, as against older types of construction.

The larger chapel (above, at left) has built-up wood trusses, 8″x10″ beams and Insulite Roof Deck applied vertically. The smaller chapel has 3″x10″ beams with Roof Deck horizontal. Beams were prestained, and no ceiling finishing of any kind was needed.

Here—as in many thousands of homes, schools, commercial buildings—Insulite Roof Deck provided remarkable *multiple* economies.

Thickest Roof Deck panels (3″), with integral vapor barrier, were applied. No added insulation was needed, of course. The prefinished ceiling—a beautiful, high light-reflective surface—provides effective sound-absorption, too.

Want technical data on Insulite Roof Deck? Write us—Insulite, Minneapolis 2, Minnesota.



Easy to heat, easy to cool. Despite large open areas, shown in floor plan above, air conditioning load at Wantagh Abbey is much lower than expected, says owner John J. Mickalek. Heating, too, is efficient and economical, because of tight joints and high insulating efficiency of Insulite Roof Deck.

It's decking, insulation and finished ceiling. Here, in one panel, is the equivalent of several separate materials. Insulite Roof Deck comes in 1½″, 2″ and 3″ thicknesses, size 2′x8′, with vapor barrier available in 2″ and 3″ panels.

build better, save labor, with

INSULITE®

INSULITE, *made of hardy Northern wood*—Insulite Division of Minnesota and Ontario Paper Company, Minneapolis 2, Minnesota

MUTUAL TRUST LIFE BUILDING IN CHICAGO FEATURES

CURTAIN WALLS of STAINLESS STEEL

by GENERAL BRONZE CORPORATION

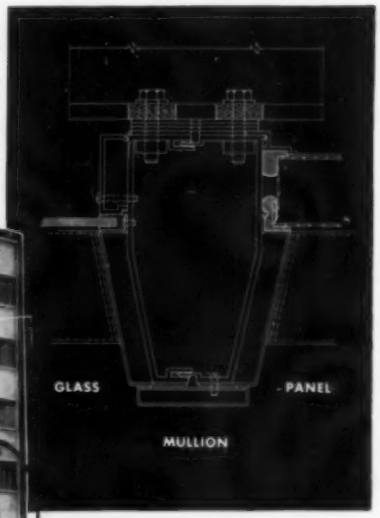
North, south, east and west... in every section of the country you'll find outstanding buildings with curtain wall systems and windows by General Bronze.

The Mutual Trust Life Insurance Co. building in Chicago, Ill. is another example of a superbly designed building featuring a curtain wall grid system *in stainless steel* by General Bronze Corporation.

If you are thinking of curtain walls (either skin or grid and panel system) in terms of aluminum, bronze, or stainless steel, we offer you the benefits of our extensive experience in designing, engineering, fabricating and erecting curtain walls. With a background of more than 45 years in the production of architectural metal work and windows, and more than 10 years in curtain wall construction, we can help you avoid costly pitfalls in this highly specialized field.

For additional information on General Bronze products—curtain wall systems, windows, revolving doors, architectural metal work – call in the General Bronze representative nearest you, or write us direct. Our catalogs are filed in Sweet's.

Mutual Trust Life Insurance Co., Chicago, Ill.
Architects: Perkins & Will
Contractor: A. L. Jackson Co.



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***Executive Offices and Main Plant:* Garden City, N. Y. *Sales Offices:* 100 Park Ave., New York, N. Y.**

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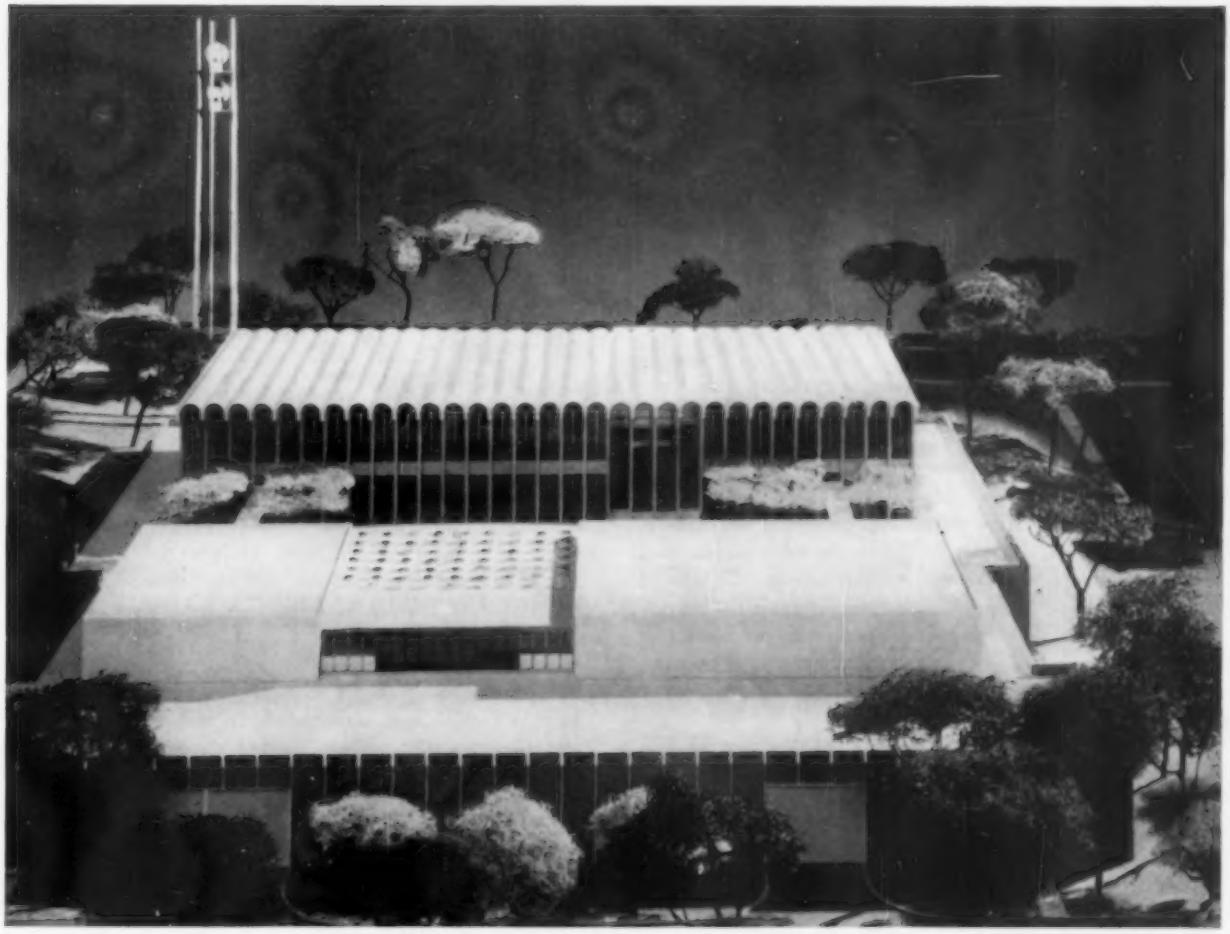
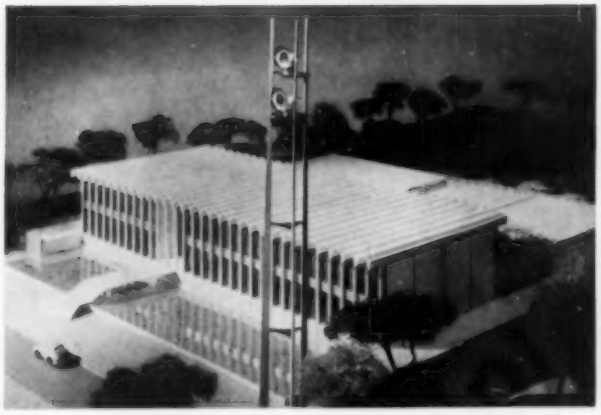
BRACH MFG. CO. DIVISION—Multel, T. V., Radio and Electronic Equipment. **STEEL WELDMENTS, INC. DIVISION**—Custom fabrication in steel and iron.



OFFICES AND STUDIOS FOR CBS, ST. LOUIS



CBS offices in St. Louis and Studios KMOX-AM-FM-TV will be housed in this new building designed by Minoru Yamasaki, of the firm of Yamasaki, Leinweber & Associates, Architects, of Royal Oak, Michigan. Four studios, two for radio and two for TV, will occupy a basement level. The bi-nuclear scheme planned for the upper level will be arranged around a landscaped courtyard. In the rear portion of the reinforced-concrete structure (above) will be the cafeteria; the two-story mass at the front, covered with thin-shell concrete vaulting (left) will contain offices—radio executives on the first floor, TV executives on the floor above. This raised pavilion will be reached from the street by steps and a bridge across a reflecting pool.

Photos: Lionel Freedman

p/a news bulletins

• Newest U. S. contribution to Berlin's 1957 International Building Exhibition (NEWS SURVEY, August 1956 P/A; NEWS BULLETINS, September 1957 P/A) is Congress Hall (right), erected as a memorial to Benjamin Franklin. Designed by Hugh Stubbins, structure will be turned over to West German government for cultural use when exhibition is closed. Main feature of building is arched steel-concrete shell roof. Steel structure is anchored in bridge piers at ends of building—from piers extend two arches, forming edges of roof. Cables supporting dip in roof swing from piers; concrete bows are hollow. Circular building has concrete and glass walls; platform is white stone. Height of roof bows is 8 meters to provide stabilization and allow for heat expansion. Included in building are: exhibition hall, double-story recepton hall, studio theater, main auditorium, conference rooms, restaurants, offices.

• Milton S. Osborne, on year's leave from Department of Architecture, Pennsylvania State University, is now Acting Director of School of Architecture, University of Toronto, Toronto, Canada. . . . James W. Elmore has been named head of new architectural division in Arizona's State's College of Applied Arts and Sciences. . . . Newly appointed instructors in architectural engineering department of California State Polytechnic College are R. L. Graves, Anatol Helman, Robert E. Williams, W. R. Phillips.

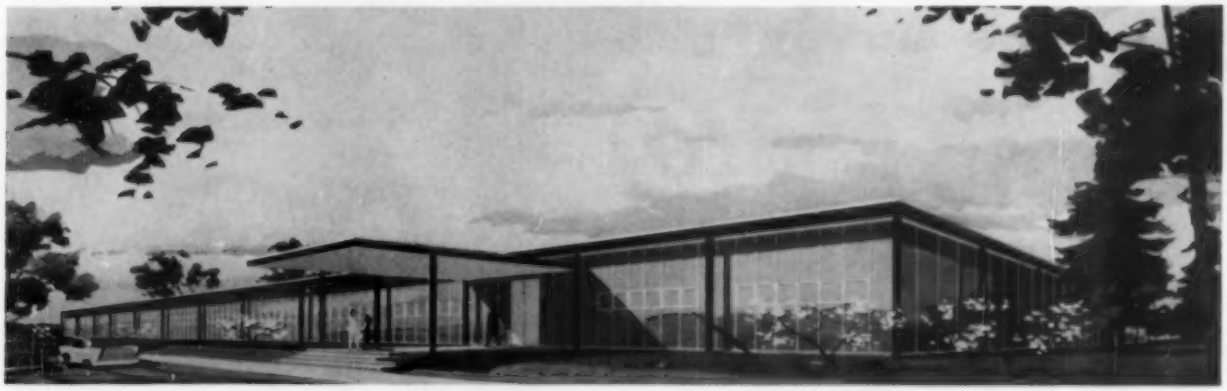
• International competition for new City Hall and Square, Toronto, Canada, will be in two stages. Eight winners at end of first stage will receive $7500, complete in final stage; winner of second stage will be architect for building, receive $25,000 in advance of fees. Conditions of the Competition now available. Write: Prof. Eric Arthur, c/o City Hall, Toronto, Canada. Application fee of $5.00 will be returned to those who actually submit drawings for competition.

• 1957-58 officers of Instrument Society of America will be Robert J. Jeffries, President; Henry C. Frost, President-Elect-Secretary; Philip A. Sprague, Dr. Ralph H. Tripp, Vice-Presidents. District Vice-Presidents: Carl W. Gram, Jr., John T. Elder, Gordon D. Carnegie, John F. Draffen, Adelbert Carpenter.

• Frank P. Brown Medal given each year by The Franklin Institute will be awarded to Dr. Pier Luigi Nervi, Architect and Professor of Structural Design, University of Rome, for his work in reinforced-concrete construction, at ceremonies, Oct. 16. . . . Paul McCobb, designer of U.S. Pavillion at 1957 Triennale di Milano, will be featured speaker at Art Directors Society of Pittsburgh symposium, Oct. 5.

• American Academy in Rome will offer limited number of Fellowships for students capable of doing independent work in architecture, landscape architecture, history of art, sculpture, painting. Open to U.S. citizens for one year beginning Oct. 1, 1958, fellowships have stipend of $1250, may be renewed. Write: Executive Secretary, American Academy in Rome, 101 Park Ave., New York 17, N. Y.

• Effective Oct. 1, Dr. Robert F. Oxnam, Vice-President for Administrative Affairs at Boston University, will assume Presidency of Pratt Institute, Brooklyn, N. Y., succeeding Dr. Francis H. Horn who recently resigned. . . . Paul Nelson will be Visiting Professor at Pratt this year, announces Dean Olindo Grossi of School of Architecture.

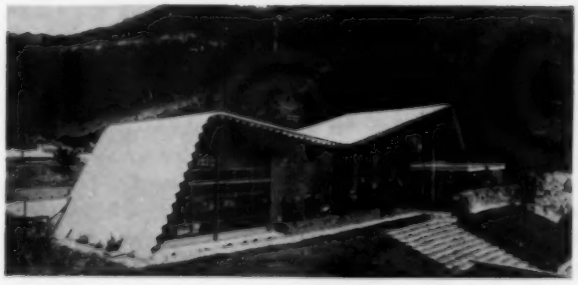


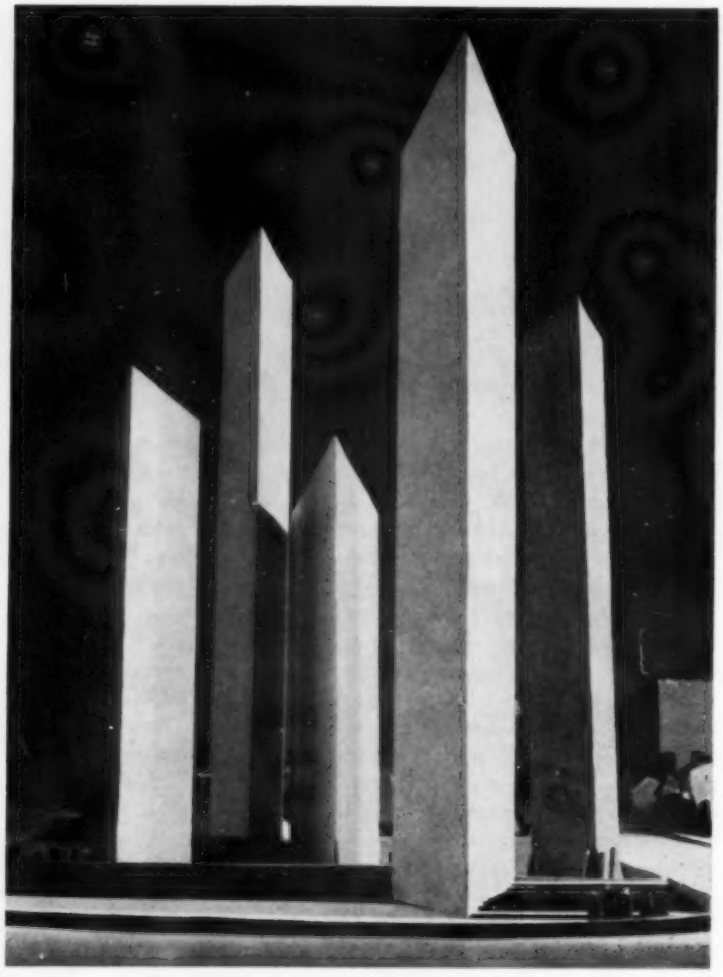
• New CBS Laboratories, designed by Gordon Bunshaft of Skidmore, Ownings & Merrill, will be erected in Stamford, Conn., by summer 1958. One-story air-conditioned building (above) will provide additional research facilities for fields of audio and visual techniques, electronics, industry. Structure is designed to blend with rural landscape of 11-acre site. Important feature is open-air inner court in center of building to be used as rest area for employes. Construction will be of steel and aluminum, with glass-wall modular face. Translucent blue glass will form walls for three sides, while fourth side will have conventional clear plate glass. Flat over-hang roof will be supported by skeletal steel columns standing outside of modular frame. Steel framing and canopy at front entrance will have black finish. Site will have parking, recreational ares, in addition to laboratories, offices provided in main structure.

• Air Conditioning & Refrigeration Institute will hold 10th annual exposition in Chicago's International Amphitheater, Nov. 18-21. . . . "Cellular Plastics in House and Home" will be theme of conference, Oct. 16, sponsored by Cellular Plastics Division, Society of the Plastics Industry, Inc. . . . National Institute of Wood Kitchen Cabinets will meet Oct. 20-22, in French Lick, Ind.

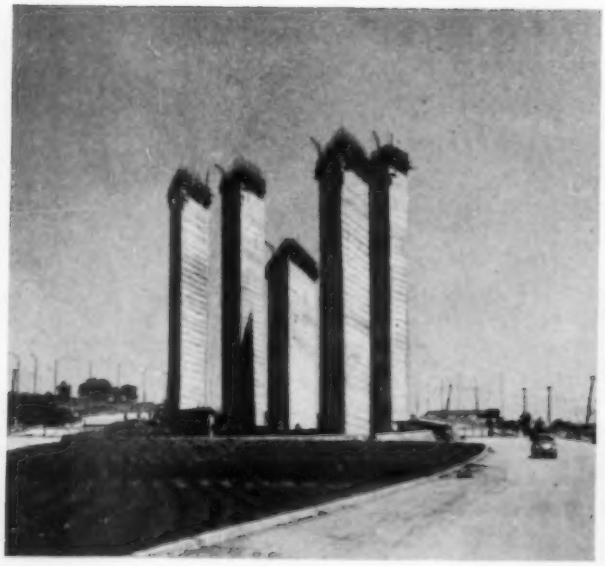
• National Institute for Architectural Education will aid New York's State Division of Housing's research program to find ways to reduce high costs of home building. Plans include conducting nationwide competitions open to architectural students for best suggestions. Awards will be in three categories: typical apartment, by student of elementary design; entire building by intermediate design student; project and site plan, by advanced student.

• A representative view of Venezuelan Architecture today is seen in current exhibition, "Architecture in Venezuela," co-sponsored by The Venezuelan Society of Architects and Creole Petroleum Corporation, which has been at World Affairs Center, New York. Exhibit will tour major colleges, museums—first stop is Pan-American Union, Washington, D. C., Sept. 20-Oct. 20. Included in exhibition are large mounted photographs, stereos, transparencies. Examples of various types of buildings are included: single-family houses, civic, educational, commercial centers. Structures feature use of concrete, porches, porch roofs; brilliant colors, local materials where possible; importance of interior spaces stressed. Pictured below and acrosspage are works included in exhibition (left to right)—typical low-income housing project, Caracas; School of Architecture, University City, Caracas—Carlos Raul Villanueva, Architect; Hotel Alto Llano, Barinas—Oscar Carpio, Guillermo A. Suarez, Architects, with Ramon Burgos; night club "Casa Monagas," Caracas—Martin Vegas, José Miguel Galia, Architects; ancient Santa Teresa Church, Caracas.



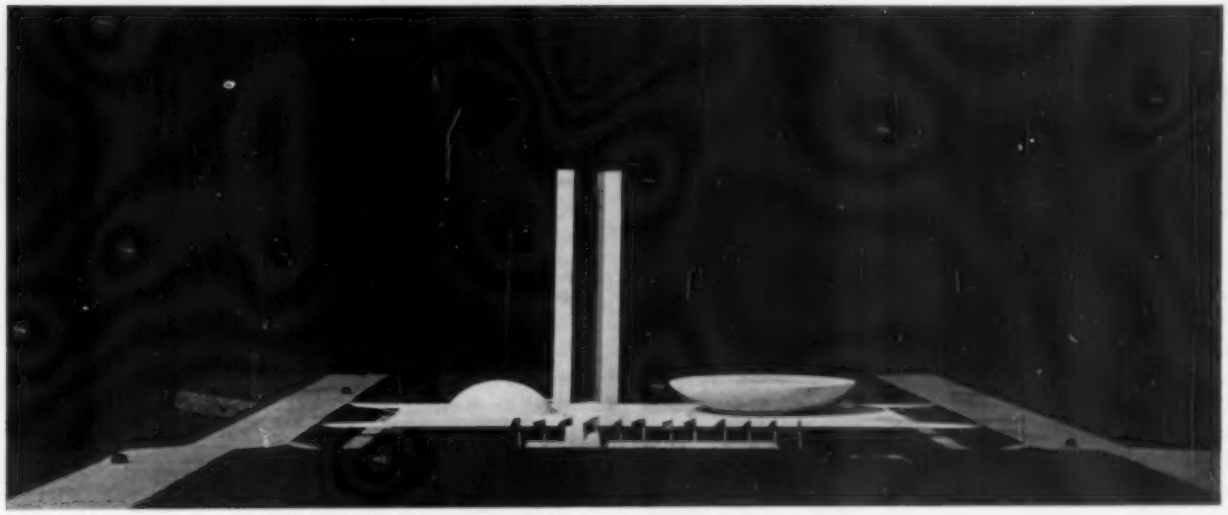


TO MARK MEXICAN SATELLITE CITY

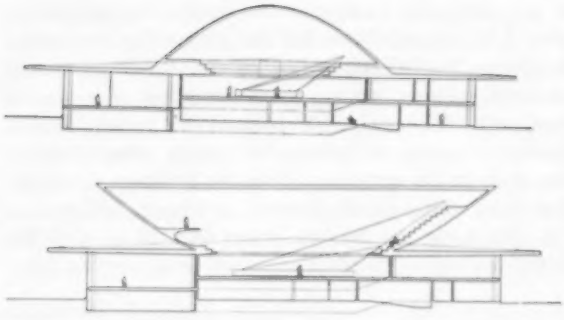


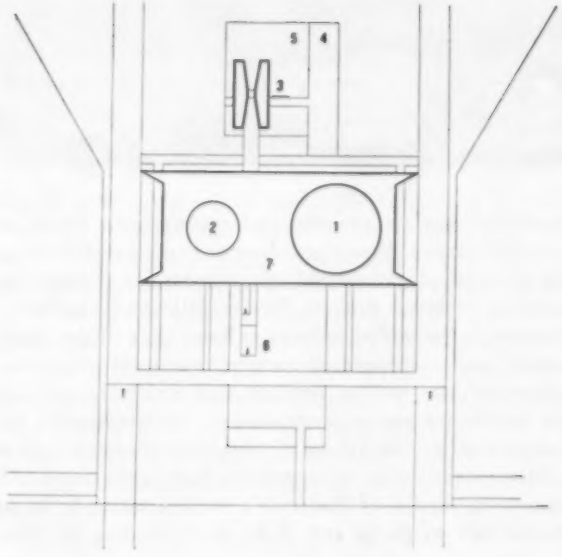
Five concrete pylons will mark the entrance to a new city currently taking shape in the vicinity of Mexico, DF. The large-scale sculpture is to greet visitors arriving via a new freeway linking the two cities, to provide a dramatic point of interest for the residents of the town, and to attract home builders to the new development, intended to offer relief from the congestion of the capital. The towers (left) are wedge-shaped forms, their sharpest edge pointed toward the City of Mexico. They will be placed on a tri-level base carpeted with lawn. A reflecting pool will mirror their great height. Originally meant to be 300 ft tall, the towers have now been redesigned in the interest of economy, to measure 110 ft and 170 ft in height. One of the spires will serve as an observatory, the others may be used for the storage of water. Designer of the towers is Mathias Goeritz, whose wood sculpture portraying San Giminiano and Manhattan (above left) motivated the monumental composition. Luis Barragán is the Collaborating Architect and Landscape Architect; Mario Pani, General Co-ordinator of the master plan for the Satellite City.

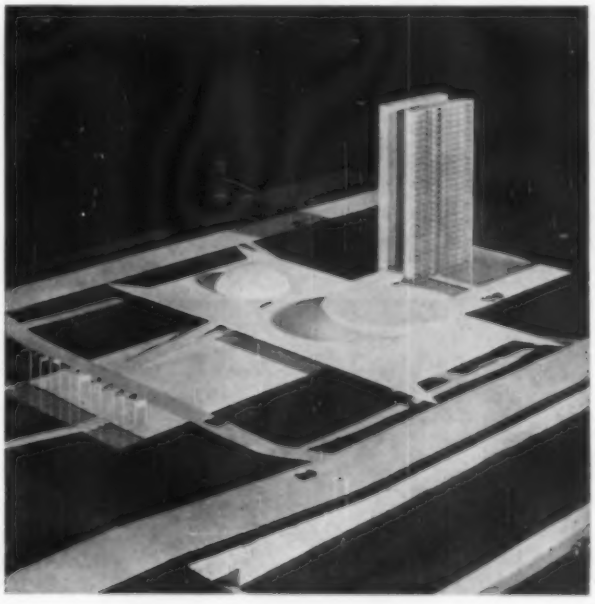
TO HOUSE BRASILIAN CONGRESS



This building, designed to accommodate the Congress of Brasil, is the second one to be erected in Brasilia, the new national capital in the State of Goyás. First to get under way is the Presidential Residence (April 1957 P/A). The Congress Building will be located at the apex of an elevated plaza, triangular in plan. The Supreme Court and the Chief Executive Building, housing the offices for the President and his staff, will occupy the other corners. This triangle is the main feature of the plan by Lucio Costa, who won the competition for the master plan of the newly established capital (May 1957 P/A). The main elements of the Congress Building (plan below) are: the House of Representatives (1); the Senate (2); an office building (3) rising from an immense pool (5); a monumental ramp (6) and esplanade (7). The circulation of officials and public has been separated. The project was established under Oscar Niemeyer who is the Chief Architectural Director for the Authority responsible for the building of the new capital.







Washington report

by Frederick Gutheim

Inauguration of the Connecticut General Life Insurance Company's building in suburban Hartford last month was occasion for a stimulating symposium, "The New Highways: Challenge to the Metropolitan Region," in which two Federal programs, roads and redevelopment, were involved. Despite the interest provided by the symposium, the building itself remained easily most important, as well as a concrete example of the decentralization of modern cities. This is the culmination of the architecture of Skidmore, Owings & Merrill, and its outstanding Design Partner Gordon Bunshaft. It is also, as the Company proudly claims, "the first building to make the fullest preparation for modern office technology," as well as one profoundly oriented to its awareness of the human factors in today's large-scale organization, recognizing that you live where you work, as well as where your home is.

The fact of the conference was hardly less impressive than the meeting itself. As Lewis Mumford observed in his thoughtful concluding remarks, this event not only exemplified the company's leadership and showed its recognition of its public responsibilities: but also stamped an intellectual character on the building and its handsome auditorium as a conference center. Among many meetings of a similar nature, this was remarkable because of its audience—typically composed of community leaders whose position allows them to do something about the problems discussed, rather than made up of planners, architects, and technicians. For many such leaders, drawn from all parts of the country, this was an introduction to new ideas, and the influence of the meeting will be correspondingly wide. As one who has been bored, and not infrequently disgusted, by openings of hotels, ocean liners, bridges, and other structures, I commend with enthusiasm Connecticut General's flight from the time capsule, the starlet, and the other conventions of the press agent.

As for the symposium, it succeeded (as such ventures, at best, succeed) in impressing its participants more by enlarging their understanding of the great and continuing opportunities of a better relationship between new superhighways and the evolving shape of our metropolitan areas, than by providing any ready-fitted conclusions or solutions. The new highways are the 41,000 miles of high speed, dual-lane, limited access expressways which are to be constructed over the next 16 years. Some 6000 miles of these are located in metropolitan areas (although representing nearly one-third of the total cost of the system, which is over $100 billions). As they slice through the hearts of cities, the displacement of population is enormous—some 90,000 persons annually. The roads themselves become major barriers, the potential dividers of primary land uses or of city neighborhoods and districts. The possibility of using this great building effort to aid slum clearance and redevelopment, and thus to co-ordinate highway building with other municipal objectives, is a very promising one. The need for such co-ordinating two Federally aided programs is explicit. This was concretely illustrated by the symposium's discovery that, until they were introduced a few weeks before in the course of planning this conference, the Federal highway and housing administrators had not even met each other!

In the larger view of expanding metropolitan areas, the new highways are already powerful instruments in relocating industry, business, and suburban growth. In Boston, the

300 ATTEND BRI PLASTICS STUDY GROUP IN ST. LOUIS

St. Louis, Mo.—Almost 300 members of Building Research Institute met here, September 17 and 18, at Brown Hall Auditorium on the campus of Washington University, for the Fourth Meeting of Plastics Study Group. Sponsored jointly with The School of Architecture and The University College of Washington University, the two principal subjects of the work conference were "Plastics in Roof Construction" and "Plastics in a New Building." Tuesday morning's sessions

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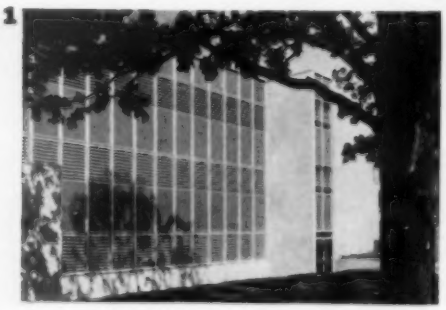

included papers on phenolic and thermoplastic foams as thermal insulation, discussions of vapor berriers and flashing, and a report of architctural requirements for roofing materials by Architect Anthony Ferrara, in which he quoted a reference to the roofing industry as being (as a whole) "complacent" and challenged all manufacturers—old and new—to develop new roofing products that architects may use with confidence and appropriateness. At luncheon in the Student Center, The School of Architecture's Dean Joseph R. Passonneau—holder of degrees in both architecture and engineering—spoke of tomorrow's roofing concepts in an informal talk on plates and shells, demonstrating his ideas

completion of Route 128 has illustrated how a circumferential expressway can attract to the sites it has made newly accessible, virtually the entire industrial growth of the area over the past half-dozen years (a disorderly, sprawling, unplanned mess of future problems for the State of Massauhusetts). In the growth of outlying regional shopping centers, the new highways are of decisive importance. For business, the conference had to look no farther than the Connecticut General building itself for an example of a structure "well served by today's roads and even better by the projected highways of the future." But these fortuitous adjustments to highway planning are short of what the symposium clearly felt was needed: a highway network planned not solely within its own criteria but as part of a comprehensive transportation plan conceived as furthering the organization and growth of large metropolitan regions.

What the new highways can accomplish in the traffic-congested central business districts was brilliantly illustrated by Victor Gruen's show-stopping slide presentation of his Fort Worth plan. By enlarging further his experience with the plan since it was first published two years ago, the architect produced a general theory of urban planning which struck the imagination of the conference. We are planning superhighways, of course, like a railroad system without terminals or depots. Nowhere is this more evident than in the parking problem. But turning what has been regarded as a necessary evil into a first-rate planning opportunity is Gruen's accomplishment. It is encouraging that Fort Worth is proceeding with its realization.

That other cities are co-ordinating highway planning with their broader development programs would have been more evident had the conference been held several months later, when plans now in the works are published. But enough of such efforts was reported to establish that while there is much cities can do on their own initiative, not enough of them are doing it. The greatest shortcomings are the failure to integrate highways with other forms of transportation, and to take a broad metropolitan view of the future city rather than to look at the central city alone. Action at Federal and state, as well as at municipal, levels of government is needed if the new highways are to be unifying rather than disorganizing influences, destructive rivers of cement creating more problems than they solve.

Some steps which the conference suggested will undoubtedly find their way into legislation. As a response to the most substantial paper presented to the symposium, that by the geographer Edward A. Ackerman, raising questions about the national distribution of urban population, the Congress will be asked to re-establish the National Resources Planning Board. Amendments to Federal roads legislation requiring mandatory referral of highway plans to local planning agencies are also probable. Some changes in Federal grants-in-aid for local planning to insure their strengthening rather than obstructing metropolitan regional planning efforts will also be sought. By such measures to co-ordinate the highway and urban development programs at Federal and local levels, some of the present shortcomings can be overcome.

All this reflects a pragmatic concern with means, methods, and business machinery. What was lacking, despite the efforts of such figures as Mumford, Gruen, Feiss, Stein, Bacon, and Burchard, was an equivalent concern with the human purposes of cities today and the corresponding needs which highways must serve. The quality of city life, the vitality of cities, the visual and tactile order of cities—such questions of the end-result of planning efforts were relatively overshadowed, and with them the equally great question of what will motivate people toward the measures of urban reconstruction that are needed.

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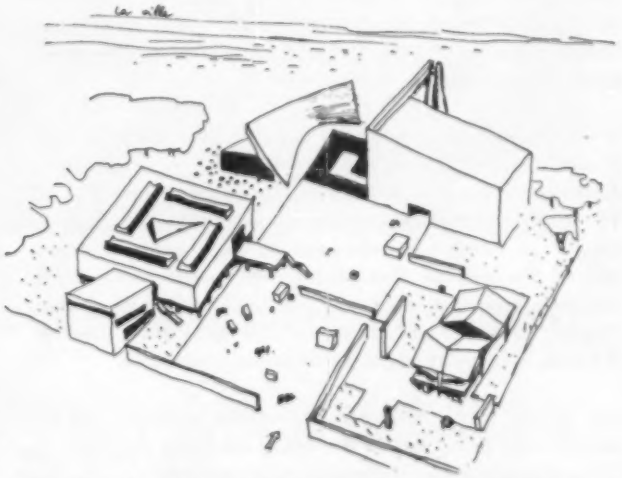
with cardboard models of imaginative roof forms. The afternoon session offered talks on surfacing materials and skylights. Wednesday's case study was devoted entirely to Monsanto's new Inorganic Chemicals Laboratory in suburban Creve Coeur.* Specific aspects of the study were fabrication and erection of plastic components (the plastic curtain wall, **1**), architectural design and co-ordination, building-code-acceptance, job management and organization of the work, and management objectives and supervision. A tour of the Laboratory Building in the afternoon revealed more than 80 different practical applications of plastic products —virtually a catalog of what is commercially available today. For the lobby, Artist Robert Harmon has created a decorative screen, using an entirely new technique, by embedding stained glass in glass-fiber-reinforced polyester resins. Backlighted by more than 100 lights and located in a 9′ x 20′ alcove, the screen tells the story of phosphorus—basic product of the Inorganic Chemicals Division. Although not a part of the tour, visitors to Creve Coeur could not miss the adjacent, stunning new office buildings, **2**, designed by Architect Vincent G. Kling to be occupied by Monsanto employes in October. BURTON H. HOLMES

* Pronounced "Creeve Core," if one hopes to get there by taxi.



Le Corbusier: 70-Years-Young Designer

Le Corbusier, who celebrated his 70th birthday, October 6, continues with remarkable vigor to lead the search for 20th Century design expression. His National Museum of Fine Arts of the West (above) is a center commissioned by the Japanese Government for Tokyo's "museum park."

p/a financial news

by William Hurd Hillyer

Tight money talk, like rumors of Mark Twain's death, is decried in high quarters as "grossly exaggerated." However, among banks, opinions differ. American Bankers Association's Department of Monetary Policy has polled some 1400 commercial banks and found that nearly a third of them consider bank credit "readily available," and not quite half report it as "somewhat tight." The net result is that banks have become seriously more selective in their lending policies. Of special interest to architects is the revelation that bankers have slowed down on mortgage loans more markedly than on any other type of credit. The shortage of savings in relation to long-time money demand is chiefly blamed for this move. Other reasons mentioned in the survey are: less call for housing; unattractive VA-FHA interest rates; high construction costs and decreasing liquidity of bank assets.

"Slowdown" is also used in connection with the whole business "boom" by no less an authority than First National City Bank of New York. A minus sign supporting its thesis is found in the industrial-equipment area, which shows symptoms of fatigue. Machine tools and heavy structural-steel shapes are among the items listed as pointing to this condition—although the former showed a late summer improvement. "A strong spurt in business-ordering is needed" to stimulate output, the bank concludes. It centers its hopes on the automobile industry. The whole atmosphere lacks the sparkle of 1956, but may presage what some foreseers term "a healthy readjustment."

• Copper provides the most basic of trend-indicators as it continues to slip and slide. That metal, so strategic in building construction, is quoted at a 4½-year low of 27 cents in the United States as we go to press. Spot copper at London has dropped to 24⅞ cents. We are still of the opinion expressed on this page two months ago that a decline in copper is an anti-inflationary factor. Copper scrap has now joined the downward drift; Calumet & Hecla is on point of closing Michigan operations.

Last minute flash: Further sharp declines in copper are reported, also price cuts in the heavy aluminum field.

• Fears respecting the accumulation of sufficient individual savings to stem inflation and provide capital for construction are currently allayed by the results of a Federal Reserve Board survey. Heads of families, and other spending units, have increased their savings-plus-checking balances, and their median liquid assets are about $750. Holdings of U. S. Savings bonds, however, show a decline. Currently, Federal Reserve Bank of Chicago reports a net deposit shrinkage of $187 millions at 38 major banks in its highly industrial Seventh District, during the last week in August. The Federal Reserve of Kansas City meanwhile cites the renaissance of the "commercial paper" market (short-time borrowings of large business concerns from groups of lenders) as a mechanism whereby the shortage of construction and expansion capital is being bridged for the present.

• "Service is the yardstick" by which FHA seeks to aid lower income families to buy more and better homes, writes Federal Housing Commissioner Norman P. Mason in a personal letter to the editor of "Banker & Tradesman." The Commission's aim of assuring "the even flow of essential mortgage funds" has been helped, he implies, by FHA's low loss record.

• Construction firms topped the failure list for 1955-56 in percentage points of number, though not of total liabilities, the figures being 31 and 21 respectively, a Dun & Bradstreet, Inc., official reveals. "Failures are also rising rather rapidly among retailers of lumber and building materials," he adds. As in other business fields, "incompetence" rather than general conditions is most likely diagnosis. In its bulletin for the final week of August, Dun & Bradstreet reports over-all numerical failure rise of 17% from the preceding week and nearly 20% from a year ago.

• Mid-year pessimism is tapering off as 1957 enters the third quarter. Among the factors that are lightening the gloom may be listed the $345.5 billions seasonally adjusted annual rate of personal income reported by the Department of Commerce. This tops all previous records; it is close to $1 billion above the figures for June and $20 billions more than in July '56. Apparently, personal income is increasing faster than cost of living, which rose ½ of 1% in July '57, according to Consumers' Price Index of Bureau of Labor Statistics. Such upward tendency should go far toward supporting August all-time high of total construction—$4.6 billions—up 4% above the previous month. Public schools continue at top level, partly offsetting the lag in residential building. To sum up: Things look better because in some sectors they are not quite so good.

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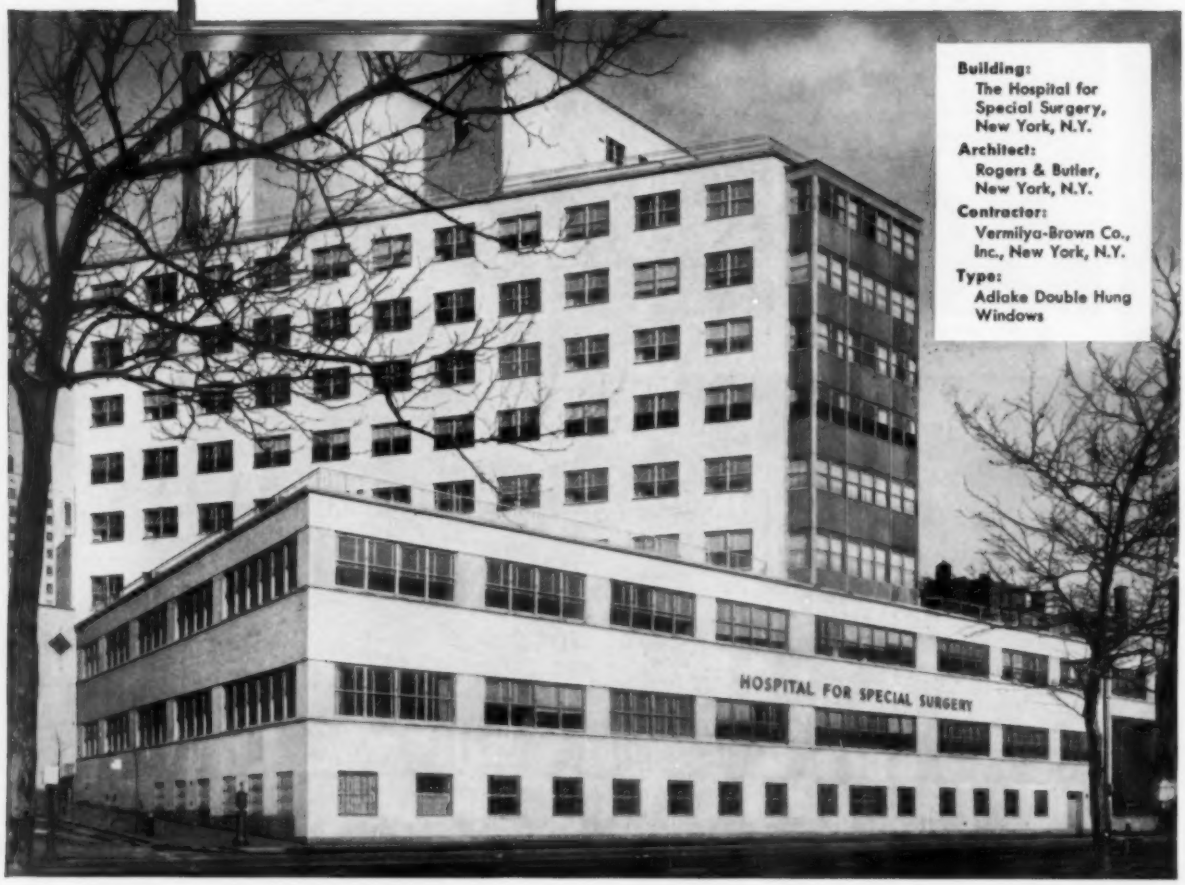

Building:
The Hospital for Special Surgery, New York, N.Y.

Architect:
Rogers & Butler, New York, N.Y.

Contractor:
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p/a design awards seminar IV

This, the fourth in a series of Case Study Seminars held at the the time of the announcement of results of the P/A Design Awards Seminar last January, edited from tape recordings, is the last of this new type of architectural critique to be published this year. The Editors hope that the 1958 Design Awards Program, now underway, will produce more of the same sort of critical, analytical discussion.

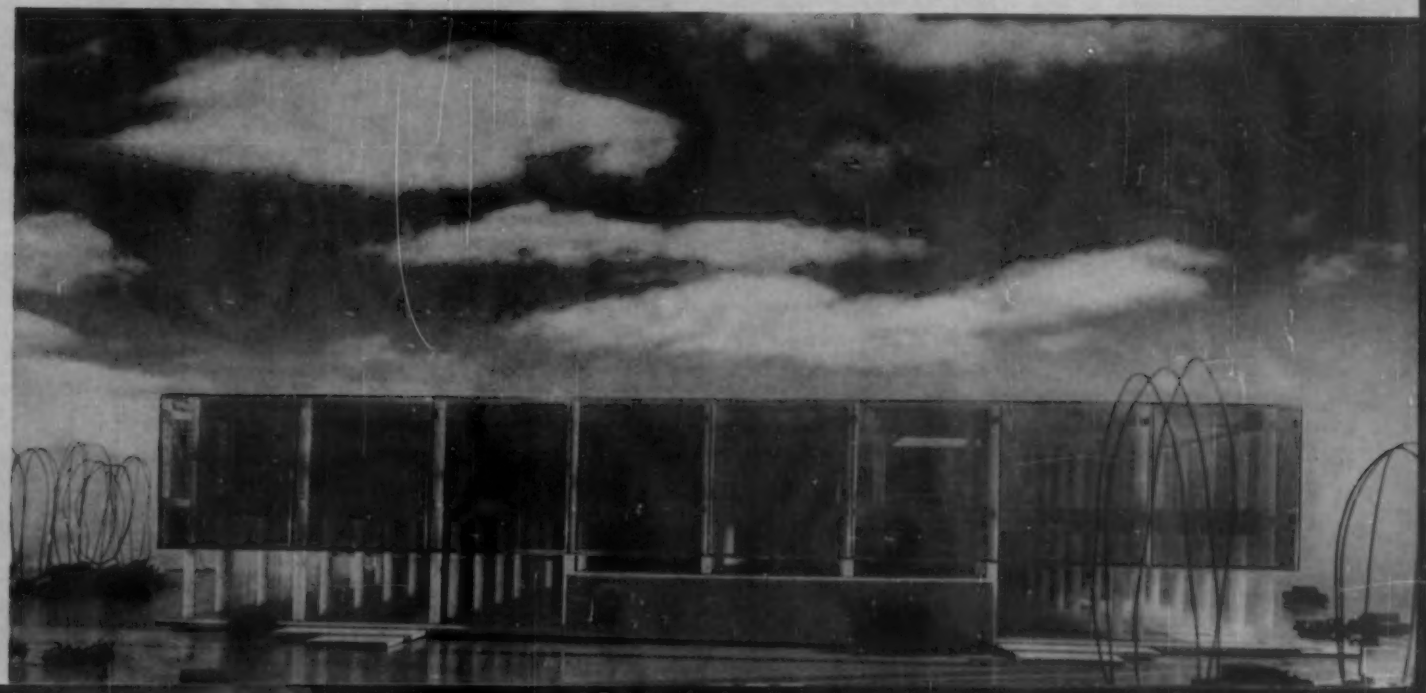
Project: **Public Library**
Client: **New Orleans Library Board**
Location: **New Orleans, Louisiana**
Architects: **Curtis & Davis, Architects-Engineers; Goldstein, Parham & Labouisse, Architects; Favrot, Reed, Mathes & Bergman, Architects**

Presentation:
Arthur Davis

I'm really a little embarrassed to present this building with a plain old flat roof. Seriously, the building is a relatively simple block, and it grew almost completely out of the needs of the client. The Librarian had very definite ideas about the philosophy of a library and had seen only one other downtown main library which had come near to what he wanted: that was the Cincinnati Public Library, designed by Woodie Garber (*December 1955 P/A*). Basically, he was impressed with the idea that the library should be something appealing, which would draw people in; his best comparison was that it should be as close as possible to a department store in concept. He wanted this for two reasons: one was to achieve flexibility (he happens now to be in a 1900 building which allows no flexibility in arrangement); and two, he wanted a library that would appeal to everyone in the community who passed by. He wanted them to come in because the building looked inviting and because they saw other people in there reading and would think that it might be a good idea to read a book once again. These were basic concepts of the client, and we thought they were very sound. The site, which is in the new Civic Center, was very limited. In fact it was so small that we had to take $300,000 out of our budget to allow for the purchase of more land in the back of the building. One of the requirements was to get as many of the main departments as possible on the first floor, and in order to achieve that we had to have a certain amount of area which required a larger site than the original one.

The building is a simple, reinforced-concrete structure. The stacks are in the basement, the main reading space is on the first floor, and the second main reading level is bisected by a mezzanine. The main entrance is off the Mall of the Civic Center, and there is a second entrance to the library from another main artery. In section, there are open perforations in the roof where

". . . a supermarket of culture in which you see all parts."



two patios give direct access to outdoor space to all of the upstairs reading rooms and provide a pleasant outdoor reading area.

On the main first floor of the library the intent was to give as large an unobstructed usable space as possible. In order to achieve this we placed carefully all the furniture for the different departments on this floor. The main check-in and check-out desks will be located right at the center-line of the library, a scheme which is considered by the Librarian to be one of the best features of the plan from his point of view. The main cataloging space is accessible to all of the principal departments of the library.

The mezzanine, (indicated by a dotted line on plan) is accessible either by the elevator or by the very open sculptural stair. The mezzanine contains display and exhibition space, and reading areas for fiction, juvenile and children's books. It is enclosed by glass so that it becomes a separate sound zone. There are secondary exits in the corners, permitting children to go to and from their department under supervision so as not to interfere with the main operation of the library. There is a main vertical circulation stack for books, utilities, and other functions, and in addition there are similar stacks in each corner so that the staff will have to walk a minimum distance to get to a vertical means of transportation.

The north side of the building faces toward the back of a bus station in a very unsightly area. This is completely closed off as a solid wall and along that wall all of our utility runs—air conditioning, piping, plumbing, etc.—are brought up to different levels and from there run through the building. The other sides of the building are open and are protected by a sunscreen which we hope will actually control the rays of the sun but at the same time will have transparency so that one will get a feeling of being in the surroundings and yet will have a sense of protection. The sunshade can also be justified on the basis of economy in air conditioning. Since the client desired to have the building an open one we figured the cost of the sunshade and the number of tons of air conditioning which it would eliminate and on that basis we calculated a saving of about $60,000 by using the sunshade. The sunshade in detail is aluminum, and we set up a model of it in our offices and by using a sun machine we checked out the solar angles and were able to give the librarian assurances that he would have no sun from 9:30 a.m. on, except for certain areas along the west wall.

One small point: The little roof deck over the main checking-in and checking-out desk was a bit of concern to us from an esthetic point of view; we weren't sure of its appearance but it was quite necessary. We now have a commitment from the Japanese consul to transport from Japan a Japanese stone garden, which will be located out there on the roof. We believe that this will be a very attractive thing as one arrives at the mezzanine level.

***Discussion:* Gordon Bunshaft**

I think that this is a very beautiful building. In fact I had my eye on it all through our Jury judgment. I think that it is very clean and crisp and the quality of translucency in the interior of the building would be very pleasant. It's the sort of architecture I would like to do myself. I think however that the success of a building like this depends a great deal on the quality of "how it's built." This building could look either razzle-dazzle or could be as elegant as the Taj Mahal, depending on, first, the detailing, and second, the manufacture of its parts. I hope that the budget allows getting the best sort of construction.

Also, I think it is unfortunate that a building like this has to be three-sided. It's the sort of building that you wish could be set alone in a park.

There is always a problem, in a design of this sort: how do you stop the building when it comes to the property line? In this scheme there is in each corner a staircase group which, it seems to me, could have acted as a stopping point for the grillage. Instead, the sunshade grillage goes on and is just cut off by the property line. In fact I believe that the grillage does "shield" some opaque walls.

One other thing that bothers me is that there has been a great deal of study given to the sunshade to protect the upper two-thirds of the building. On the remaining lower third one has the impression that in that area something different is happening in plan, from what is happening on the other floors. Actually, in studying the sections, there doesn't appear to be much difference. On the south side this lower floor is protected by the loggia or walkway, but on the west and east it would have been fine if there were space (of course I gather that there wasn't) to express the ground floor by setting it back on these sides also. You would then have a clear expression of an area protected by overhangs and another area above protected by the grillage. Of course it's very easy to do that when you don't have a client sitting on your lap telling you how much area he needs.

These are not criticisms on a broad basis; I can criticize only parts that I see. I think, broadly speaking, that the building is a terribly handsome thing. It is a credit, it seems to me, to the architects and to the people in New Orleans who are sponsoring it.

One other question: I don't know if there was enough space but I think that the patios above and the circulation on the mezzanine could have been made more dominating features of the whole concept, and perhaps could have penetrated the volume more. It would have been nice also to have that Japanese garden on the inside of the court rather than on the front appendage.

Thomas Creighton: Mr. Davis, do you want to respond to any of the detailed points that Gordon Bunshaft has raised—for instance, the question of the grillage running past some opaque walls?

Davis: I don't think that this is anything serious; it happens only on the western wall. Generally, the sunscreen comes down below the second floor line to a point where it can shield all the way to the ground except for certain late afternoon periods. We recognize that and take care of it by mechanical or technical means.

Robert Elkington: One thing that concerns me a little; you spoke of putting a Japanese garden on top of the entrance canopy. In view of the crispness of the whole design this seems a little like putting flowers on an aluminum pan. It doesn't seem appropriate.

Davis: Well, of course that is a matter of taste. I think that there is nothing more beautiful than a Japanese stone garden.

Minoru Yamasaki: I think that this is a fine building and we are talking about a detail. However, I have just been in Japan and the best Japanese gardens are always inside a wall and not bothered by a whole lot of extraneous things. I think there is a real danger of inappropriateness with that garden there.

Davis: That may well be.

John Lawrence: What provisions have been made for parking?

Davis: Absolutely none.

Creighton: How about the Civic Center otherwise? Are they going to have parking facilities elsewhere in this area?

Davis: About two blocks away, just about at the end of the Civic Center, there is parking provided for City employes in a small garage behind the City Hall.

Victor Gruen: Is it really possible

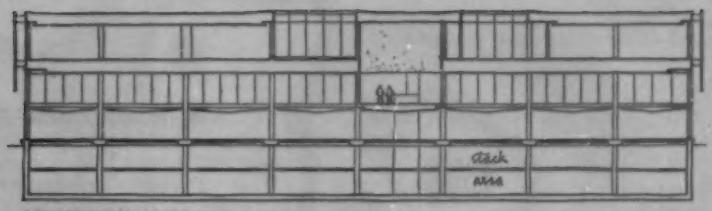
that architects are not powerful enough to get to the proper city Commissions and influence them by really strong action in such a situation? What's the sense of a public library when no one can stop? Shouldn't the architects of this city now really get together and impress on your city government that their beautiful buildings need this additional facility to make them completely usable and attractive. Surely here is a chance, here is an opportunity, to show that an important investment is being made by the city and that this investment should be protected by proper planning of the entire area round it. Otherwise, it is an empty monument, creating additional traffic problems. A building of this size would probably have a calculated need of a parking field for about 300 to 400 cars. I think that it is about 160,000 square feet. Now if that were a department store —and it probably will have about as many customers as a department store would have—it would require 160 to 200 parking spaces only for the purpose of the store itself. That is probably what you should have as a minimum for this library and there is probably already a deficit for other buildings around it.

Harry Weese: If I have any quarrel with this building I presume it should be with the clients, or perhaps I am out of the main stream of thinking about how libraries are used today. To me it is a sort of supermarket of culture, in which you see all parts from each room, which would be very distracting. I don't think I would study very well in this building. I wonder whether I wouldn't come to see people rather than to read books. It certainly doesn't seem to have any correspondence with, let us say, some of the inner recesses of the British Museum or the Boston Public Library, places where I know that people find themselves working very happily.

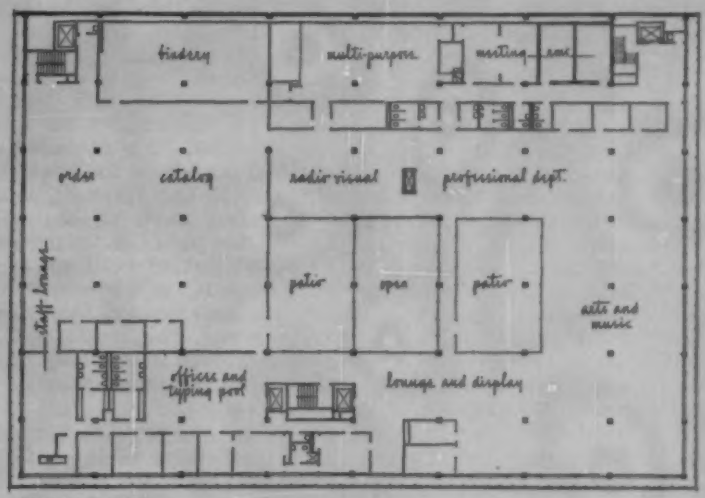
Davis: Well, as I have said, that was the basic desire of the librarian. I think that he was very frankly trying to stimulate use of the research areas, which are on the first level (mostly in the back, under the mezzanine) and which could be fairly well isolated for quiet reading. Of course, this is not the type of building that you describe at all.

Creighton: I think this is a basic question that Harry Weese has raised, which is puzzling a great many people. The desire for openness and an inviting aspect has been carried to so many building types that it may sometimes be questionable.

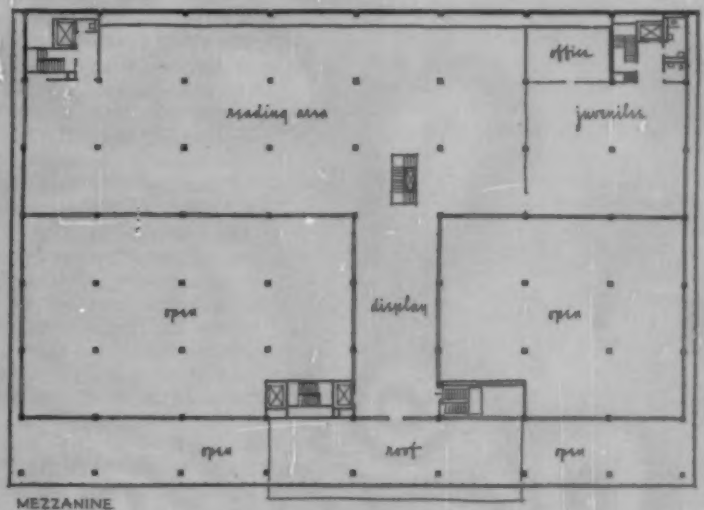
Yamasaki: I think we might express this thought further. We (my firm) are doing a building in a very dense



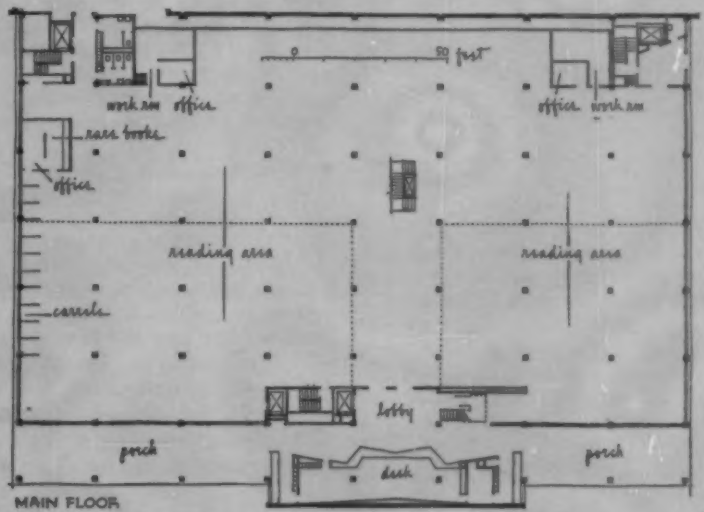
LONGITUDINAL SECTION



SECOND FLOOR



MEZZANINE



MAIN FLOOR

urban area and we are putting a 20 ft high brick wall around it. Perhaps that is a solution that should be considered. By doing this you could have your glass and openness, and it is sensible because you are looking only at your own garden. Otherwise, there is the problem of people being able to look in, and of autos going by, which might be very distracting.

Creighton: What you're suggesting, Yama, is opening up a building for the reasons for which buildings were originally opened, in a contemporary sense: we wanted more light, more air, and we were using structure and materials which did not require an opaque wall. Then you suggest, very sensibly, building a wall around it to prevent the public from looking in. However I think that this building, and many others, are opened up for a different reason: the public library is considered a supermarket, and it is opened from the point of view of inviting public participation and almost, I think, commercial participation. Your reasons for openness are then very different, and putting a wall around the building would actually defeat those very reasons.

Davis: Certainly the thought here was that people would come and shop for books. There are areas where they could isolate themselves for research, but if they will come because the building draws them and they see other people using it—the old incentive buying method—and they take the books home, that may be even more important.

Actually, this particular building is meant to be seen from three sides, and two of them face on a park. That is, there is a big plaza in front and another large plaza on one side, which can be seen and enjoyed by the people in the building and will provide a green surround. We must admit that there is a main traffic artery on the third side, and traffic circulation there may be distracting. However, we have designed screens of this sort before (not in aluminum, but in perforated masonry), and there is a certain amount of lightness and airiness about the building, and yet, inside, you do have a feeling of a definite enclosure beyond the glass wall. This is subtle, perhaps, but I think everyone would feel sure that beyond the glass wall there was a sort of screen between them and the outside world. Again, we've got to see it and live with it but I think that it will work.

Bunshaft: Perhaps if the architects were willing to give up a few of the penetrations inside the building on the upper floors we might achieve what we are talking about. The building gives the impression that it is very open on the ground floor and perhaps what ought to be on that floor are things that are noisy and casual. Perhaps the children's library should be there, and perhaps the meeting rooms should be brought down from the third floor to the first floor, in the dark space. Then you could get your main reading rooms, which I think should be quiet, on an upper level, where they could be quiet. The building to me almost expresses that. I am somewhat surprised (I don't know too much about libraries) to find the main reading rooms right down on the street. Doesn't this *parti* call for the casual in-and-out sort of business, as you might call it, on the street level, with the more tranquil things on an upper level? This could probably have been done if somebody wanted to give up the interlocking of volumes up above.

Creighton: And yet, wasn't it largely that "interlocking of volumes" that attracted you to the project in the first place?

Bunshaft: Yes, we liked it very much but now that we are learning about these other problems . . .

Nathaniel Curtis: I want to make one more observation about this open supermarket idea versus the cloistered concept that Mr. Weese brought up. Someone mentioned that different librarians may have differing ideas. I can tell you that probably 95% of the librarian experts in the field believe that the type of building which we contemplate here—with its openness and the inviting of the public in—is the right solution. I think that one thing has been overlooked, and it is hard to visualize in drawings. In these spaces, which seem very large and very open, the furniture itself and the movable shelves will create little intimate groups so that when you are sitting in one place you will have enough privacy not to be distracted. Personally, I would rather be sitting in a park to study, or contemplate, or read, knowing that I was near the outdoors, than in a dark, dusty, quiet corner of a completely enclosed building.

Charles Magruder: There is another possible advantage to the open-plan, glass-walled, unsheltered library. That is, behavior of those who use the library may be improved if they are not concealed by masonry and protective walls. Anyone who has attended jam sessions in such classical monuments as Boston Public Library Reading Room or New York Public Library Main Reading Room and corridors must feel that they are better attuned to teen-age delinquency than to serious study. The behavior in such places is shocking. The libraries have repeatedly complained about disciplinary problems. I think Curtis & Davis may have solved this somewhat by putting all these offenders in a glass case on public view.

Incidentally, in the branch libraries of the New York City system the basement reading rooms and toilets present virtually a police problem to the librarians—not infrequently they have to call on the city police to come in and clear out bums, vagrants, and other undesirables. I note that Curtis & Davis avoid this danger by locating only stacks and staff rooms in the basement.

Davis: I would like to mention one thing in defense of the city administration. One of the reasons for moving this library into the new Civic Center, and downtown, was their conviction and philosophy that in this location people in the downtown area would use the library on foot. If it were in an outlying area they would necessarily have to go by automobile. This will affect the question of parking that has been raised. It is expected that in the new location the larger percentage of the people who use the library will already be downtown and will come here to pick up books the way they would go to a department store to pick up stockings.

It is expected that private industry will build garages around the area to supply the needs of the Civic Center and to compensate for the library site, which is now used for parking. Whether this will work out from the point of view of good community planning — the question that Mr. Gruen has raised—is problematical. It may be a stopgap, but they may be able to park enough cars there. At least that is the position that the city is taking.

Finally, I would like to reply again to the suggestions and criticisms regarding the location of departments. The very things that you have mentioned as criticisms are the very things that the librarians think are the most desirable phases of this particular plan. The fact that the meeting rooms are upstairs and the people who use them (except after hours) will *have* to go through other departments and pass many books to get there, they consider a very desirable thing. The fact that the fiction and the most used department is on the mezzanine rather than on the main level, they consider desirable because in going to that department people will be drawn through the more serious sections on the same level.

preview

for november

PROGRESSIVE ARCHITECTURE

MODULAR ASSEMBLY

P/A Editors define MODULAR ASSEMBLY as "techniques of efficient utilization of modular components in architectural design and construction." This building concept is considered so important to today's architecture that the entire next issue will be devoted to the subject.

All elements going into MODULAR ASSEMBLY will be covered in NOVEMBER P/A—Modular Planning and Design; Prefabrication; Modular Components and Products; Curtain Walls; The Module Within (by G. Luss of Designs for Business); Modular Measure (discussed in a 16-page article by William Demarest); and the goal of all the foregoing factors, Modular Architecture.

NOVEMBER P/A will be lavishly illustrated with examples of Modular Architecture to show that this concept does not produce dry, sterile design. Firms whose work will be shown include: The Architects Collaborative; A. G. Odell, Jr. & Associates; Paul Schweikher; Douglas Orr; Thorshov & Cerny; Skidmore, Owings & Merrill; Carl Koch; Charles A. Goodman Associates; Ernest J. Kump; and Greta Magnusson Grossman.

MODULAR ASSEMBLY represents a great challenge to architectural practitioners for good design, increased speed of construction, and reduced building costs. In NOVEMBER P/A, you will have a complete examination of MODULAR ASSEMBLY for your reference shelf. We think it will fill a long-felt need in architectural journalism.

PROGRESSIVE ARCHITECTURE

means

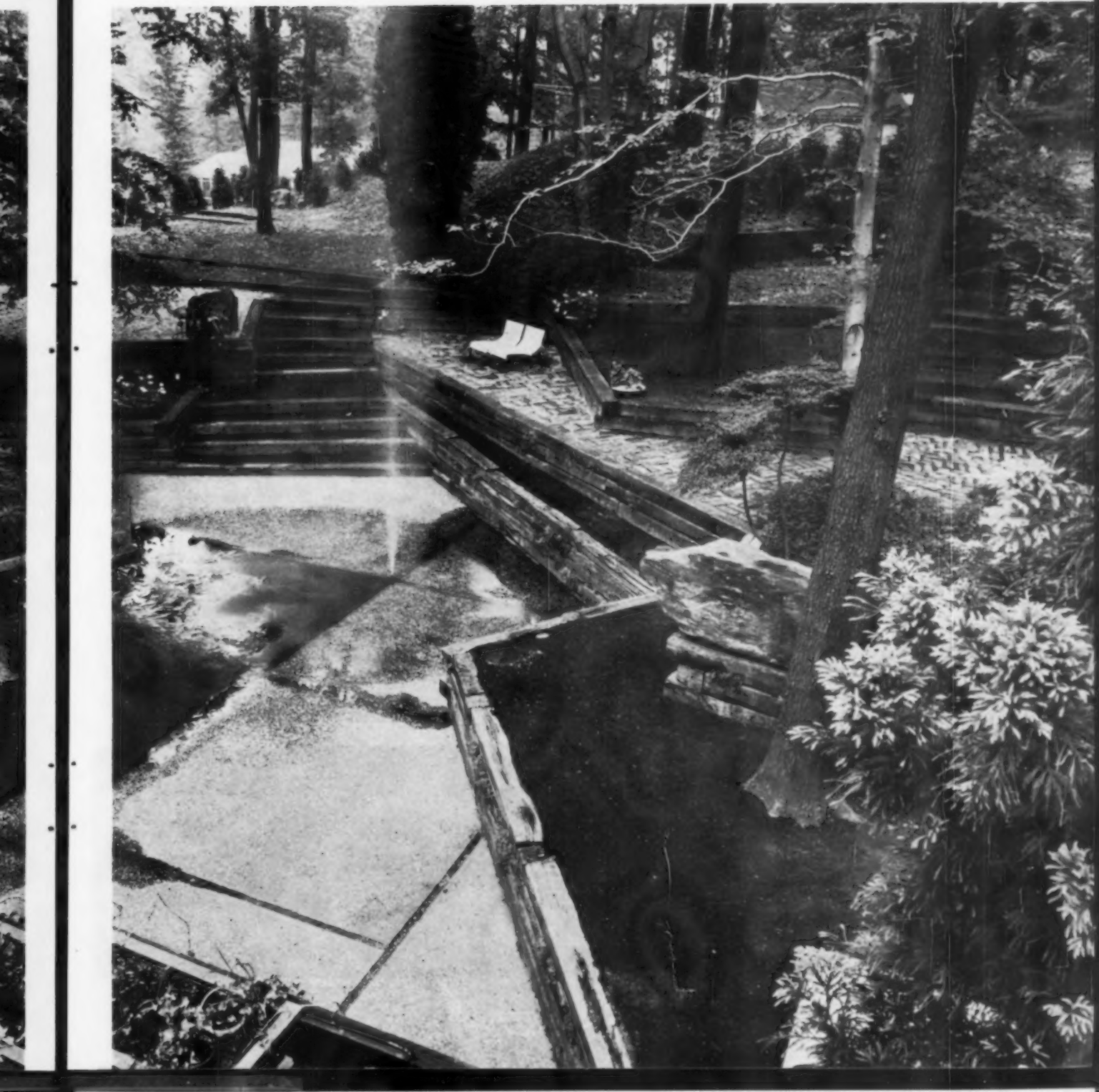
ARCHITECTURAL PROGRESS

"The house is simply another level in the remade landscape," writes James C. Rose who planned both house and garden shown on the three opening pages of "Gardens for the East." Rose is currently working on a book, Creative Gardens, *to be published by Reinhold early next year. Since it was required that all of the 5000 sq ft of enclosed living space be on one level, the sloping two-acre site had to be completely reshaped. Existing tree levels determined the new elevations, and the ground was tailored without losing a single tree or requiring a single tree well. An atrium in the center of the house further reinforces the continuity between structure and landscape. In the construction and selection of interior furnishings of this Baltimore residence, Rose was assisted by Donald Ratcliff, Henry Hebbeln, and the owner-builder, Philip Macht.*

Photos: Ezra Stoller

gardens for the east

The control of space is the concern of both architect and landscape architect. While the architect uses walls and partitions to define interior space, the landscape architect employs plant material, fences, and trellises to define open-air space and dramatize depth in vistas. Evaluation of the total design then depends on the successful relation of internal and external space. Two examples are presented in which, to our mind, an almost perfect balance has been achieved. Atrium *(above)*, terraces *(right)*, and a wealth of plant material make the house in Baltimore, Maryland, "a mere incident in the landscape." Continuity between house and garden is equally well resolved in the residence at Lawrence, New York, where "walls run through the house and out into the garden, creating terraces and changes of level and integrating the interior and exterior." That an indigenous landscape architecture of the East is emerging, as Lewis Clarke implies in his article which follows, seems to be well demonstrated by these examples from the East Coast.



planning southeastern gardens

by Lewis Clarke *

Without question, outside living is essential and necessary for a true appreciation of contemporary living. A garden is designed for a house and a complete house cannot exist without a garden. In fact, one can think of the house as the heated and cooled part of the garden and the garden as the unheated or noncooled portion of the house (*diagrams below*). When both house and garden are designed and utilized as an entity, each will be used when most appropriate, one reciprocating the other.

In the past generation, the best and perhaps most important contribution to the progress of landscape design in this country has been made on the West Coast—particularly in the San Francisco or Bay Region. Unfortunately, the design thought developed there has frequently been adopted without consideration, question, or understanding, and used throughout the country. What is good and appropriate for the West Coast is not necessarily true for other areas, although it is obviously true that the design principles and theories are constant and are, certainly, applicable anywhere.

As it is possible to feel the stirrings of a developing garden landscape along the southeastern seaboard, this article has been written in the hope that it might stimulate thought, energies, and action toward the rapid creation of a landscape that is of, and for, the area—one that will fit its location beautifully and easily, just as the present and past design work suits the Bay Region.

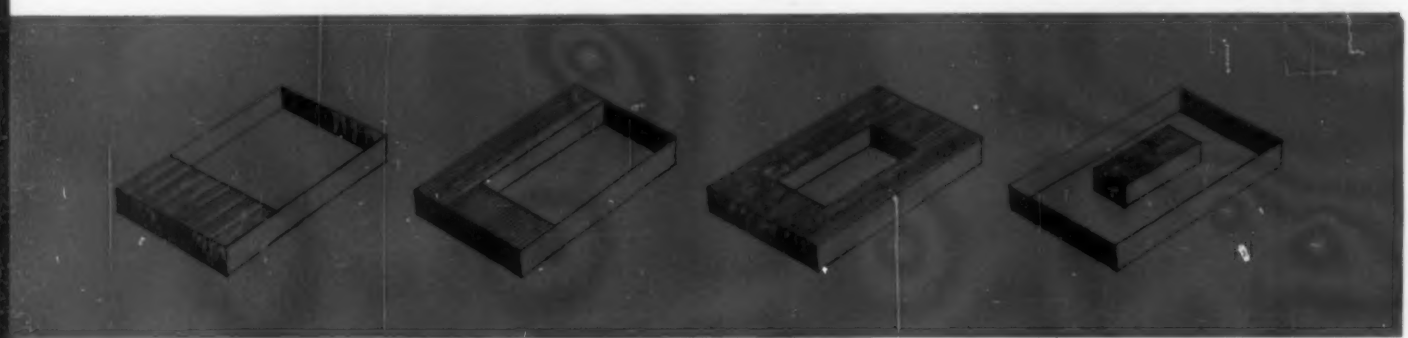
* Associate Professor of Landscape Architecture, North Carolina State College.

origination of the landscape

In order to find the basis for such a development in this coastal region, it is essential that its growth and development to date be considered and analyzed. In the past, the house was the focal and physical nucleus of the "plantation," set within a cleared area of heavy deciduous and coniferous woodland. It was surrounded by clearings which held the houses of "retainers," plantation buildings, barns, and crops, etc. The ground, generally flat or gently undulating, provided intermittent—or very occasionally, extensive—views through the forest area. Living outside was pleasant in spring and summertime, under dense shade cooled by occasional breezes. The fall held its perpetual attack of insects. Though winter sunshine warmed the clearings, much time was spent inside the house during the cold periods. Houses were generally built on the "dog-run," or "breezeway" type of plan—allowing fireplaces at each end to adequately heat the room; in the hot days, the insulated central section directed and controlled the passage of cooling air.

Due to their aroma, the stable and animal houses were sited some distance away from the main living areas so that the carriage, after dropping its passengers at the house, rolled down the driveways through the woodland and clearings to the stable and coach house.

Unlike the 18th Century European landscapes, the visual aspects were not considered or contrived, the "Grand Tours" were not taken here. Plantation landscapes grew naturally from the farming needs of the people, resulting



(with an apology to California)

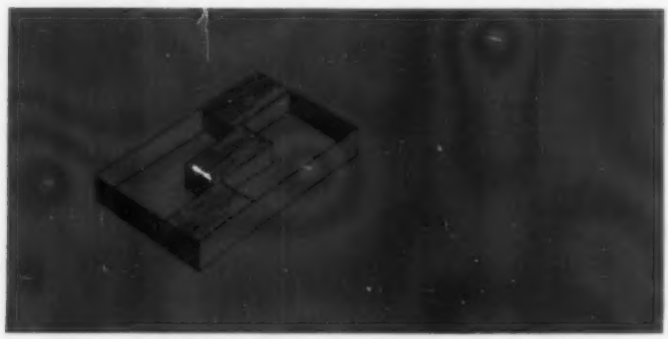
in an "unconscious," logical, land utilization. Making a living, in its barest essentials, off the land was often the preoccupation of life; once this had been established, the cultural approach could follow.

Today, many of the same factors remain in the landscape appearance—the topography is the same and the woodland is still, generally, in pine growth. Now, however, the "garden" is no longer necessary to support life, but to supplement and enrich it. Design principles have been evolved and may assist and guide the understanding designer in creating a contemporary landscape.

The southeastern coastal region—and particularly certain areas within it—is very fortunate in being at the commencement of much expansion and development and in possessing, within its boundaries, one of the most extensive and varied collections of indigenous plant growth. Such a tremendous plant wealth, with its unique requirements for garden design, can and should result in a landscape design which is eminently suitable to the area.

Some of the factors which produce these unique design requirements are listed (*overpage*) and compared with those that produced and influenced the garden design of the West Coast. It is interesting to note that California and the area under consideration have only a few design influences in common.

To illustrate briefly the effect and influence these few factors have had in California, and should have in this region, and in order to compare their relative results, two typical schematic garden designs are considered.



	Bay Region	Southeastern Coastal Region
topography	Very hilly, often rugged terrain Usually small sites	Flat to rolling sites, due partially to geological origin as a sedimentary coastal plain Fairly large sites
aspects	Views negligible, nonexistent or frequently very extensive	Views are usually intermittent, occasionally medium to extensive
plant cover	Little heavy tree growth Care, maintenance, irrigation necessary Brown appearance of vegetation in summer due to severe drought	Thickly wooded with needle-covered forest floors Tremendous wealth of easily grown indigenous plants Green vegetation all year round
climate	Warm, coolish winters Warm, cool summers Pleasant warm springs Severe summer droughts	Cold winters in north areas Hot summers Pleasant warm springs Generally short summer droughts
bugs	Little insect problem	Insect problem in fall, particularly in the central and southern regions
tradition	Some historical help	Mass of historical design help and direction
people	Rapid population growth with understanding, acceptance, demand for outside living	Slow population increase with a slow but gradually increasing understanding of contemporary outside living
existing "style"	Accepted landscape "style" or principles	Little evidence of a contemporary landscape design, "style," or principle
miscellaneous	Automobile travel Minimum of servant help Less and less time for maintenance	Automobile travel Rapidly decreasing servant help Less and less time for maintenance Lack of incentive for maintenance during summer heat

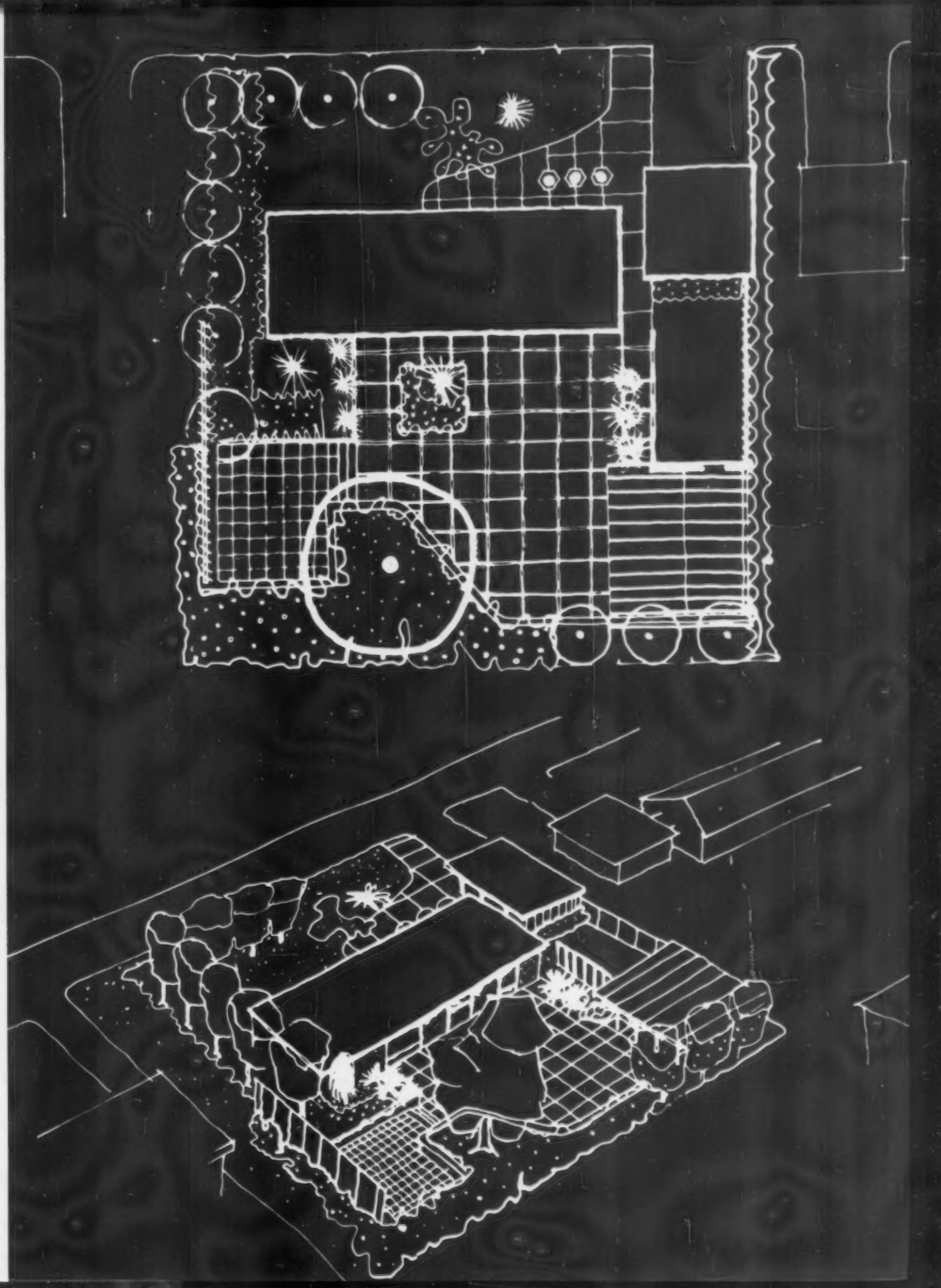
California

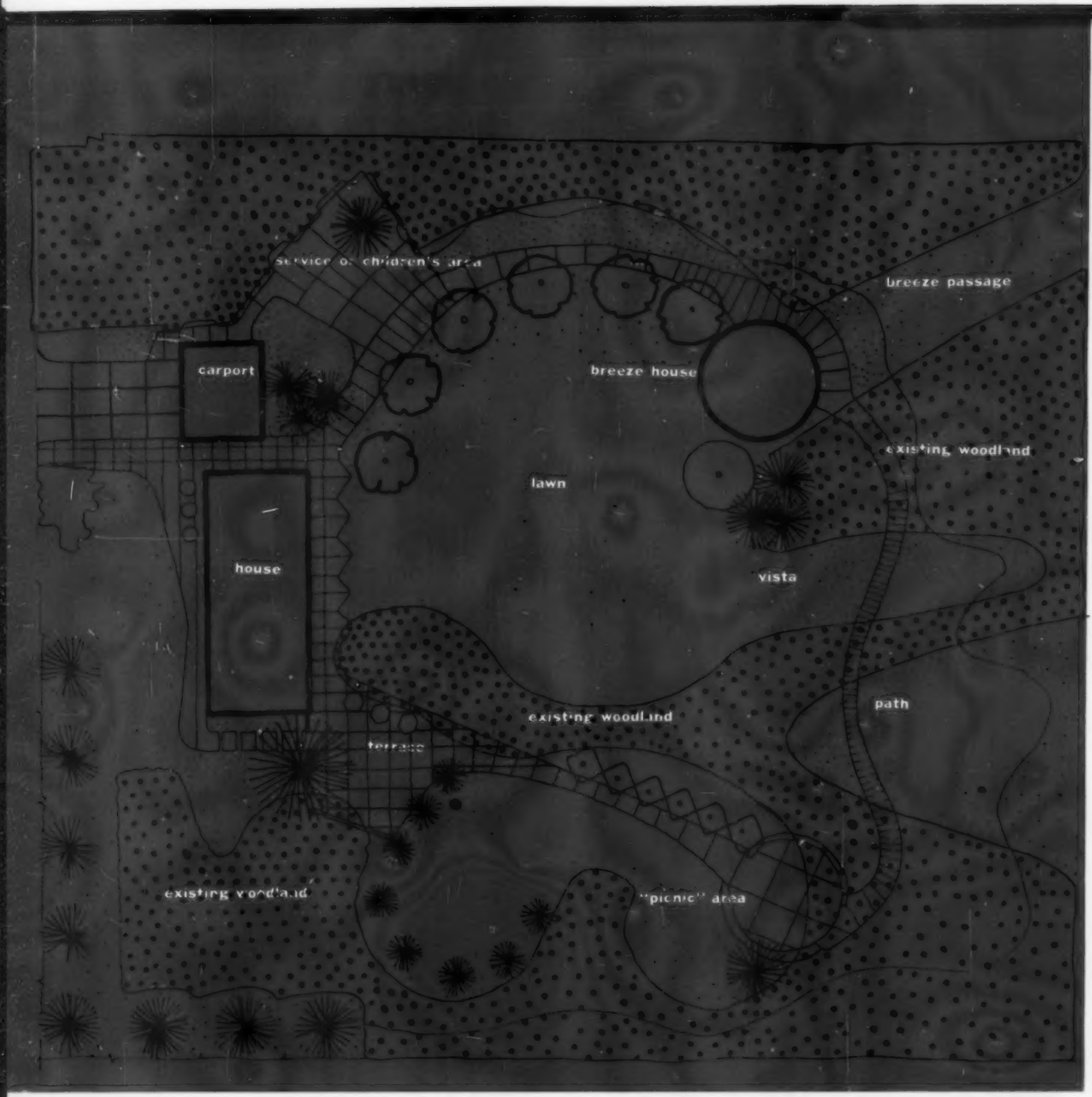
These sites (*acrosspage*) are usually small and expensive. Due to their hilly character, the terrace must be placed adjacent to the graded level area necessary for the house. Though visual and physical connection is immediately achieved, a uniform atmosphere through the terrace and living room is difficult to avoid and must, therefore, be exploited as a design influence. The adjacent terrace allows sunlight and heat to be reflected indoors. The extensive view over the bay, experienced from the living room and from the terrace, is a common advantage. Frequently, the proximity of neighboring properties has resulted in the development of the "California" screen which, needed to secure privacy on the terrace, produces the typical spatially enclosed atmosphere.

Lawn areas and most plants requiring irrigation during the summer months, demand much care and maintenance. In order to reduce the maintenance problems, plants are frequently grown in tubs and pots, and paving is substituted for lawns. This produces the typical visual aspects of the California garden—somewhat architectural in appearance.

Few walks of changing character are possible through the garden because the terrace or outdoor living area must serve a multipurpose function—for sitting, conversing, dancing, relaxing, outdoor cooking, and playing, etc. Evening illumination often assists in increasing the spatial feeling and variety of the area.

In an attempt to obtain variety and a desirable seasonal change, new plants are exploited to advantage and specimen planting against the architectural enclosure is empha-





sized. It is essential that terrace furniture be carefully chosen, arranged, and changed because it frequently appears permanently in view. Sometimes it is impossible to decide whether one is inside or outdoors, unless it rains—which it seldom does during the summer months.

In contrast, the landscape designer of the southeastern coastal region is able to use the natural climatic and vegetational change, and he should make every effort to do so as a local design influence. Maintenance of a balanced indoor-outdoor relationship must be preserved in a climate and region which is most desirable and eminently suitable for outdoor living.

southeastern coastal region

The house (*above*) is still located as the nucleus; its views from within vary in character in each direction over planting and lawns in the garden. These are easily grown and maintained, especially with the introduction of various new grass strains and partial irrigation. No garden furniture or terrace impediments need intrude permanently into view. Few garden screens are needed for privacy, due to the continued use of fairly large sites and the presence of second to third growth woodland.

Immediate physical access should be achieved from indoors, at all times, into the different areas of the garden.

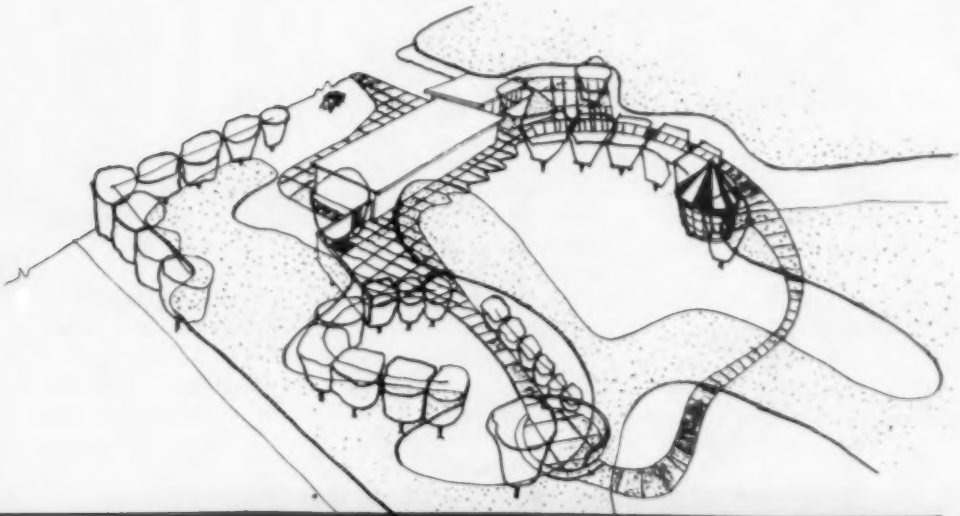
This access onto an all-weather paving would lead to various sections of the garden, allowing year-round and all-weather use. This paving, in small areas, need not reflect sun glare or heat indoors, which should be avoided in this region. The sitting area or terrace can then be located in a place which is easily accessible to the house; densely shaded during the summer months; allowing the penetration of sunlight for warmth during the winter months; and preferably shielded from winter winds. Access may be provided to other garden areas and features such as an isolated, outside cooking area. A real "picnic" atmosphere may be secured away from the house amidst the surrounding woodland screen.

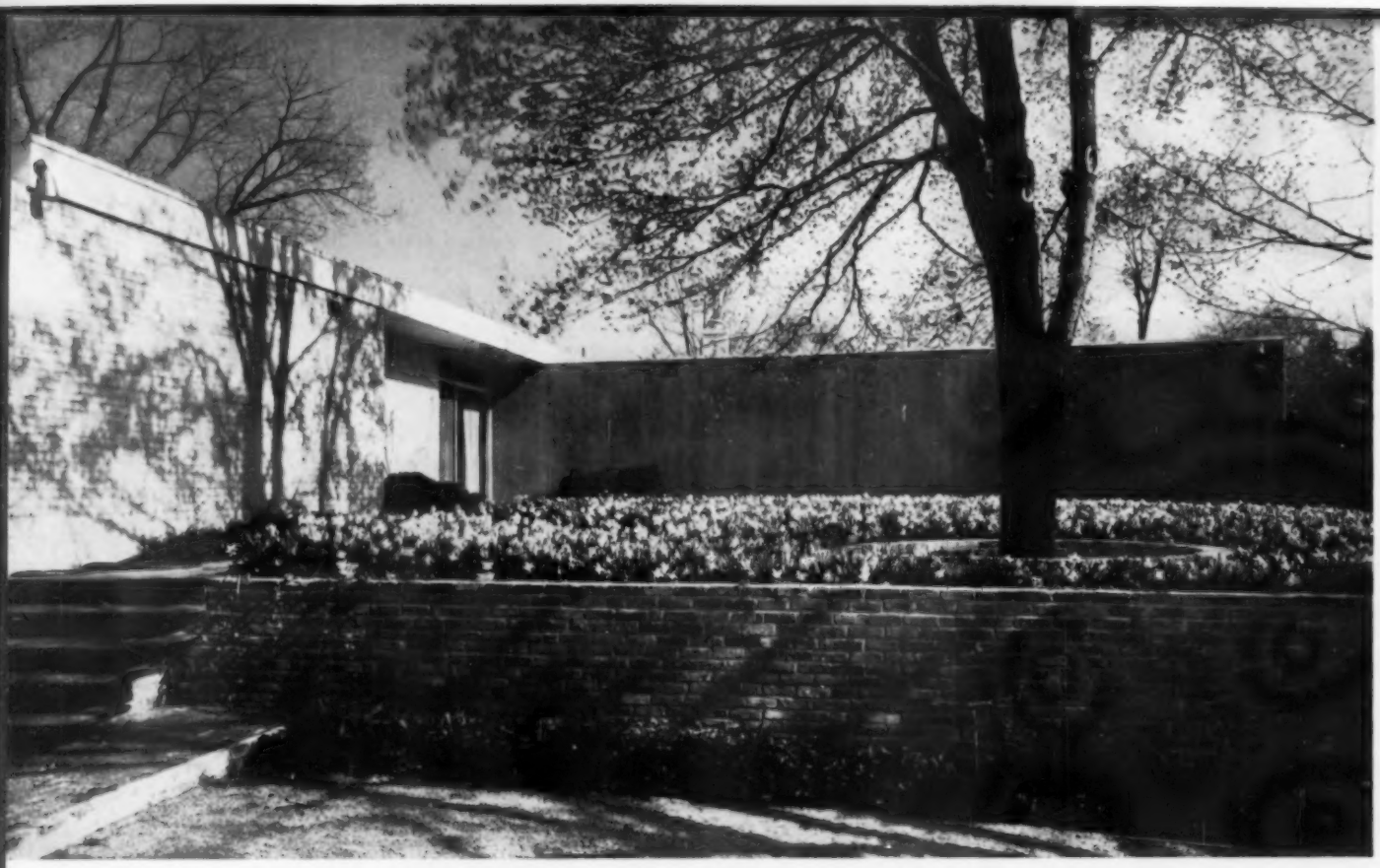
Walks through woodland shade, sunlit clearings, and past the various garden areas lead to the "screened porch" which is so essential for fall relaxing. In the past, the screened porch was the converted "dog-run" or "breezeway," and it developed eventually as a separate attachment to the house. Drawing upon this tradition of dispersed buildings, this "breeze house" (*below*) may now be located as a utilitarian and visual feature in the garden, sited so that cooling breezes may be directed through it by cutting wind channels through the woodland.

As in California, the car has taken over the role of the horse and no odors or aromas remain. The carport is now placed near the kitchen to facilitate food delivery and entry into the house in inclement weather.

All of the garden sections described are utilitarian and most necessary, and their visual influence results in a landscape which should be suitable to this area. To these may be added facilities such as: kitchen gardens, play areas, swimming pools, and other recreational tools. Many may be added or omitted for economy, but few factors should demand a multipurpose area, as one finds in the Bay Area. Here, instead, the whole site should be used.

This design should allow family and guests to stroll after dinner, from the dining room into the garden, across the summer terrace, through the cool shadows of the enclosing woodland, past the picnic spot, crossing the main garden vistas, through the woodland again, and into the isolated breeze house. Here coffee is heated, liqueurs are sipped, and everyone reclines in the breeze, protected from the encircling insect attackers. Eventually, the return is made to the house where music listening may be continued, within view of the illuminated lawn and garden. Such a garden becomes part of, and a way of life.





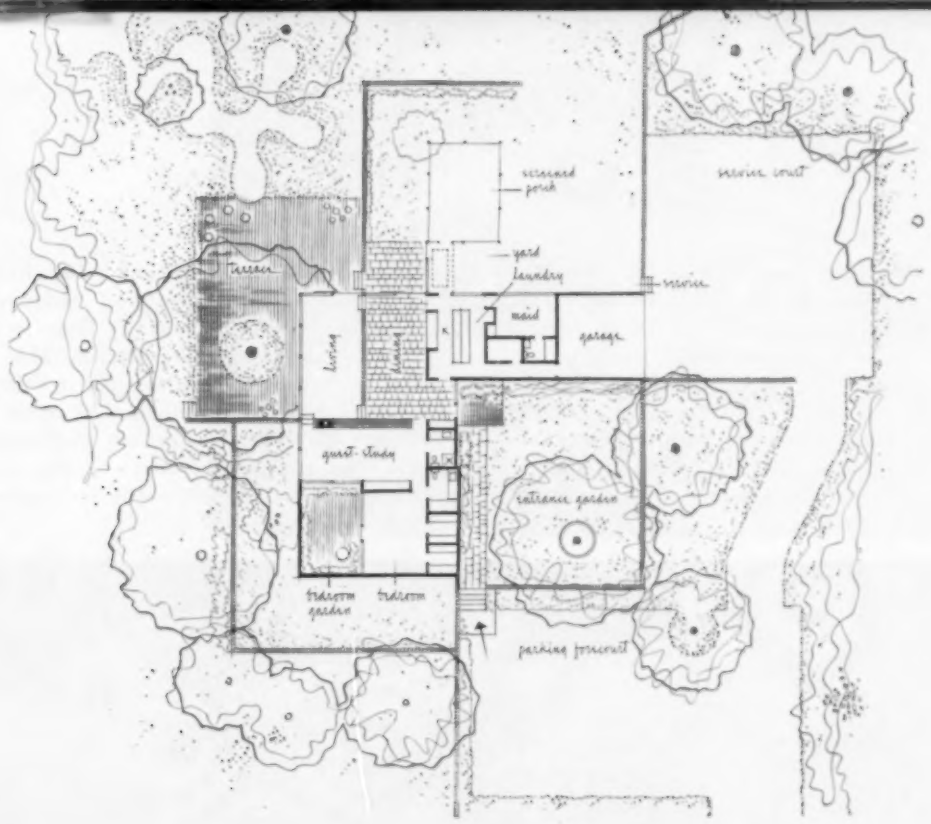
architectural landscaping on Long Island

The following explanatory notes are by Robert L. Zion, Landscape Architect for this residence. William Breger and Stanley Salzman were Architects; Harold Pivnick, General Contractor.

Entrance garden (*above*). Here the first impression of a house is made. This is a raised, evergreen garden (pachysandra, vinca, boxwood) for year-round interest. Bulbs appear in the spring and various foliage plants show themselves in the summer (*acrosspage*). Summer color is attained by plants in pots (geraniums in shades of pink and white). Large elm tree growing at original level was walled and preserved as a design feature. Lighting in the well makes of this tree a piece of sculpture—equally interesting in summer and winter.

Driveway is made long in feeling by planting heavily on both sides with weeping willows to create narrow tunnel effect. Gives feeling of seclusion.

Parking forecourt (*below*) was designed as a piazza for viewing the house. In addition to a parking area, this court serves as an auxiliary terrace for large parties.


screened porch
yard
laundry
maid
garage
living
dining
guest studio
entrance garden
terrace
terrace
parking forecourt

Sweeping view of golf course and water is kept from visitor until he enters the front door, by heavy planting and walls in the parking court and by the absence of windows on the north and west sides.

Walls. There are over 300 ft of retaining walls on an originally level site. Primary reason was to raise the house in order to get maximum view. These walls run through the house and out into the garden, creating terraces and changes of level, and integrating the interior and exterior.

Bedroom garden. Paved with brick. Wall painted blue to discourage insects, also good background for green foliage of espaliered grapes. There is a pool with vertical jet, and night illumination. This garden is the result of a setback made necessary by the desire of the owner to have floor-to-ceiling glass in the bedroom and yet have the security and privacy afforded by the masonry wall. This space also becomes a suntrap, a pleasant place to breakfast late into fall and in early spring.

gardens for the east

Path system. Since evergreen ground cover does not tolerate foot traffic, a path system through the property became a necessity; and since such a system of paths would be under constant view from within the glass-walled house, something more interesting than the conventional, straight-line path was called for. Also, with such a sweeping view beyond, the area in the foreground might appear quite static; hence movement was introduced into the design of the path system. The material was chosen to match—in color—the sand traps of the golf course, thus strengthening the illusion that the fairways and greens are part of this property. The path system is also important in encouraging one to circulate through the property and view the house from various pleasing angles.

Living terrace. This terrace was made especially commodious, as much for purposes of entertaining as for the restful visual effect upon the guest immediately upon entering the house. It is made to appear as an extension of the floor of the house. This terrace, which is the center of the outdoor living activities is equipped with night-lighting, telephone outlets, a speaker extension of the indoor phonograph, and a television outlet.

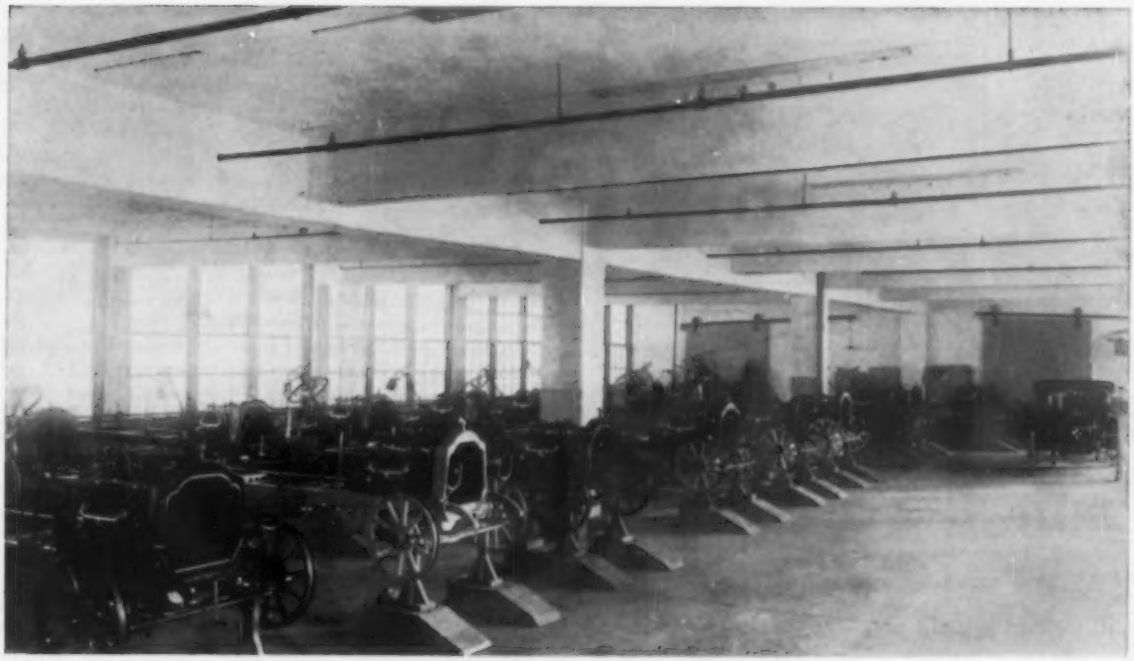
Outside areas designed as a series of rooms: Parking court (piazza), service court, entrance garden, living terrace, dining terrace, sheltered living area (screened pavilion), bedroom garden, retreat, kitchen garden.

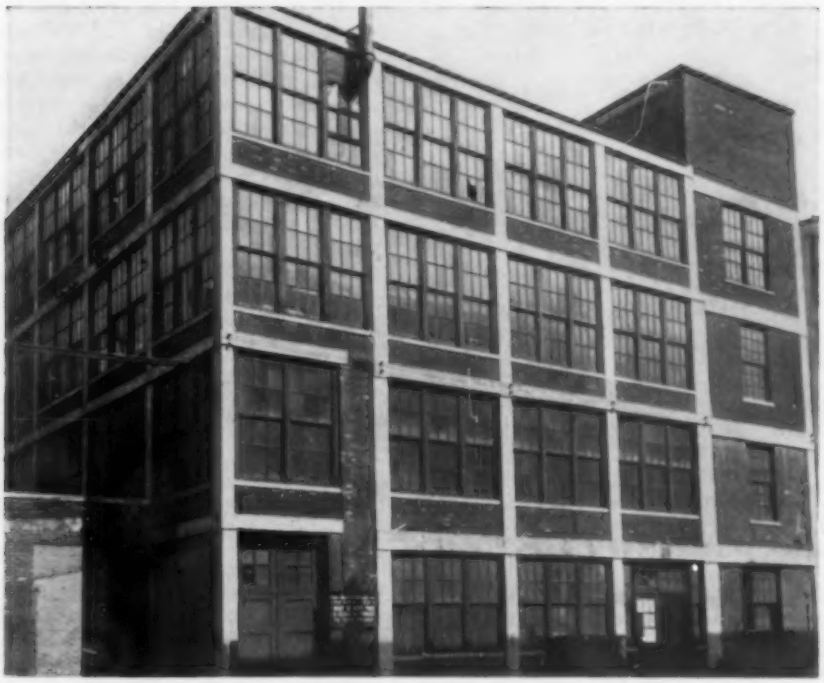
Planting. An absolute minimum of maintenance. Complete elimination of grass in favor of evergreen ground covers of different shades and textures (ivy, pachysandra, vinca, etc.) Heavy use of flowering trees, in preference to shrubs. Spring and fall bulbs in huge quantities (these appear year after year without any care, need little or no cultivation and are planted among the ground cover).

Photos: Alexandre Georges

PROGRESSIVE ARCHITECTURE IN AMERICA

FACTORY FOR PACKARD MOTOR CAR COMPANY—1905
Detroit, Michigan
Albert Kahn, Architect
Ernest Wilby, Associate





J. McCaughey

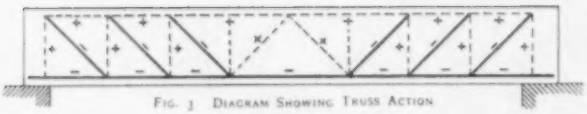
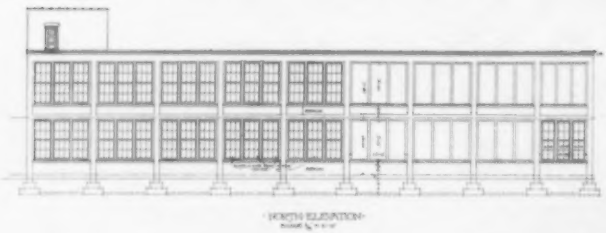
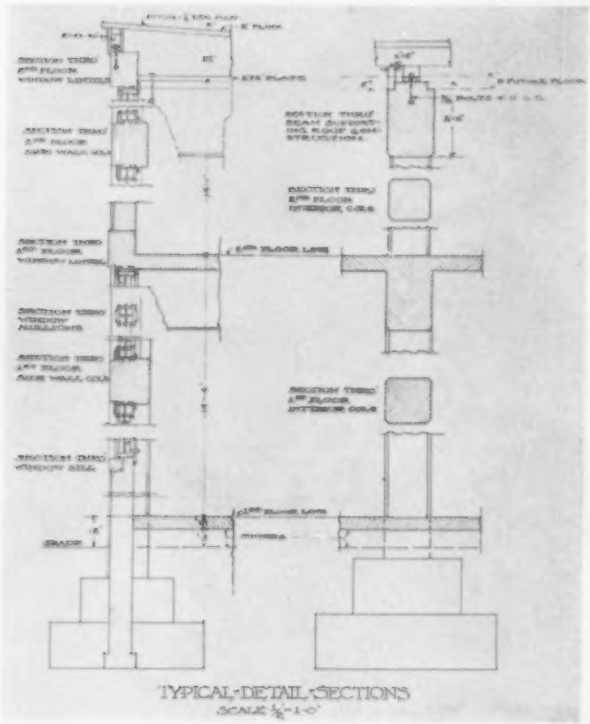


FIG. 3 DIAGRAM SHOWING TRUSS ACTION

FIG. 4 CROSS SECTION AND VIEW OF KAHN TRUSSED BAR





The factory is one of America's most significant contributions to the history of building. Its structure and form, dictated by that peculiarly American phenomenon—mass production—have influenced almost every phase of contemporary architecture. The simplicity and flexibility of the industrial plant—its open areas, wide spans, glass walls, unit construction—the particular emphasis on space, light, and air that it introduced, have become basic elements of design; the endless repetition of its standardized exterior patterns has supplanted the classically organized façade and revolutionized the man-made scene. Scarcely a school, hospital, market, office or administration building, apartment house, or large-scale structure of any kind exists that does not bear the mark of the factory style.

Commonplace now, these were revolutionary innovations at the turn of the century. When Henry B. Joy commissioned Albert Kahn to design the first Detroit building for Packard Motor Car Company, industrial architecture was in its infancy. There had been some use of iron and steel in connection with traditional brick-and-wood construction, and Ernest Ransome had already erected sizable factories in reinforced concrete. Slow-burning mill construction, however, was still the general rule, with its heavy timbers, masonry walls, myriad columns, and small windows. Kahn's initial building for Packard, in 1903, has long been denoted as the first industrial plant to introduce reinforced concrete to the automobile industry and to factory design. The present research establishes that Building 10, erected two years later, in 1905, actually was the first of the Packard group to use this construction. The Kahn office had meantime completed nine Packard buildings, all of the conventional, slow-burning type, before this departure was made; and several important reinforced-concrete plants had preceded it in other parts of the country. Since the decade from 1900 to 1910 was equal to a century, in terms of previous progress, the correct identification and dating of this factory changes the story of American structural development.

Even in the revised chronology, the 1905 Packard plant stands as a major landmark in more ways than one. Although it must now postdate the Ransome concrete factories in Beverly, Massachusetts, and East Rochester, New York, it still remains one of the pioneer achievements in industrial design. It was a first for the automobile industry—and the automobile industry revolutionized the factory plan. Where 16- to 20-foot spans had been sufficient in mill-construction buildings, automobile production needed clear spans of at least 30 feet. Because the manufacture of automobiles was experimental, methods were constantly changing, as were the specifications of the physical plant. Efficiency and speed were the only consistent rules of the business. Few architects could have met the challenge, and fewer still were interested in the pressures and dubious prestige of factory design. Albert Kahn had no such compunctions! With his practical training, strong business sense, engineering knowledge, and respect for utilitarian structures, he successfully transferred the aims and achievements of these industrial pioneers into a new kind of building. In close collaboration with the industry's production managers and engineers, he and his associates developed the specialized solutions that were to have such an extraordinary impact on the architecture of the world.

The design of the Packard factory incorporated a notable structural advance. Albert Kahn's brother, Julius, had developed a trussed-bar reinforcement against shearing stresses, which he had successfully incorporated in War College buildings in Washington, just prior to the construction of the new plant. Julius Kahn's method stressed the value of consistently attaching the vertical stirrup reinforcements to the horizontal tension bar, for the most efficient transfer of stresses to the member best capable of carrying them. He did this in an ingenious, practical, economical manner by using a bar with two projecting wings, the wings sheared and bent at an angle of about 45 degrees, to pass the plane of rupture at nearly right angles, forming stirrups rigidly connected to the main tension rods. This substituted a scientific system of vertical reinforcement for the rather empirical methods of the time.

There was a direct relationship between the new factory construction, increased efficiency, and improved working conditions. The simple slab-girder-beam reinforced-concrete structure gained additional floor space, greater strength and rigidity, and a maximum of light and air, permitting the larger window areas that introduced the "daylight factory." Although iron and steel had already achieved similar results, reinforced concrete eliminated the considerable amount of wood still in use at that time in metal-framed structures. It was fireproof, firm against vibration, clean, bright, easy to maintain, and its cost was less than structural steel. Kahn's 1905 Packard plant was a deceptively simple solution to a complex problem, based on an early understanding of the principles of economic production and the possibilities of a revolutionary kind of standardized structure. This formula was to have a deep and surprising influence on all phases of contemporary design.

ADA LOUISE HUXTABLE

Particular thanks are due Albert Kahn Associates for photographs and for assistance in research of original documents pertaining to the Packard plant.

Although a few structures in this country have been designed by the plastic theory, the method has yet to be generally accepted by building codes. The American Institute of Steel Construction, after 10 years of research, has now officially recognized plastic design in steel and has conducted conferences at a number of universities throughout the country to present the theory to architects and engineers. This article analyzes the plastic theory, lists its benefits, and shows—by example—that it is actually easier to use and provides more savings in steel than the elastic design of continuous beams.

Plastic Design in Steel

by William J. McGuinness*

Continuous frames of structural steel are stronger than we once thought. Studies of their behavior—under working loads as well as under loads that cause permanent deformation and, finally, failure—have given rise to the belief that such frames can support greater safe-working loads than assigned to carry by designs based on conventional elastic theory. Conversely, for fixed-design loading, lighter sections may be chosen. Investigation has revealed that a new kind of analysis, based on the "Plastic Theory," is valid and has now been accepted.[1] England has some 200 buildings designed by the plastic method; the 1953 National Building Code of Canada permitted plastic design; several plastic-designed buildings are now being built in the United States where codes have recognized the new theory. Before the new theory is understood, however, a number of questions may be immediately suggested.

1. We have been building continuous-steel frames for a long while. Why is it that plastic design was not thought of earlier?
2. Deflection is often a limiting factor in design. If lighter sections are used, won't deflections be excessive?
3. Is it intended that structures will be designed with an expectancy of permanent deformation under working loads?
4. Will the new theory apply to all structures and thus constitute a revolutionary and permanent change in structural design?
5. Will working stresses be within the elastic range, or above the yield stress and in the plastic range?
6. With the help of Hardy Cross, and others, design procedures for continuous structures have been simplified. They are still, however, a bit more difficult than those for statically-determinate structures. Will the new theory add a design burden that may increase engineering fees?
7. To what extent has plastic design been applied to buildings now completed?
8. Is it accepted by building codes?
9. What *is* plastic design?

Perhaps it would be better to consider the last question first. In doing so, answers to some of the other questions may appear. A simple definition or statement of the theory is not possible; therefore, a discussion seems most appropriate. Plastic design is based on the fact that steel is a ductile material; if a load in excess of a certain value is applied, yielding will occur at locations of greatest stress. Beyond this point, there is a redistribution of stresses which forces other locations, previously understressed, to assume a greater share of the load. In the end, under increasing load, the structure ap-

* *Chairman, Department of Structural Design, School of Architecture, Pratt Institute, Brooklyn, N. Y.*

[1] *The American Institute of Steel Construction will issue a design manual on the subject, this year.*

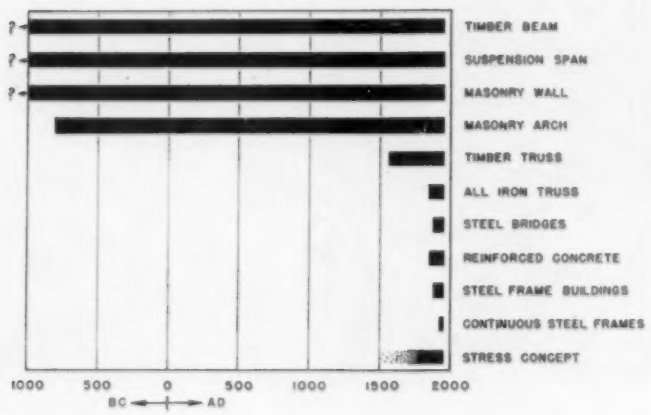


Figure 1—structural origins (from a report by Prof. Bruce G. Johnston in the Proceedings of the AISC National Engineering Conference of 1956).

proaches a condition in which most of the structure is working to advantage to sustain a total "ultimate load." This condition will not necessarily cause a collapse, but it is assumed to be the largest load that the structure can carry. The lesser load under which the frame will eventually operate bears a fixed relationship to this ultimate load. This factor of safety or *load factor* is the relation of ultimate to working load of the *structural assembly*. This is different from the elastic theory in which the flexural stress, at yield point, bears a fixed relationship to the specified working stress at the point of maximum moment only. Usually this is 1.65, because 33,000 psi is the guaranteed-minimum yield stress of steel, and 20,000 psi the *AISC Specifications* for allowable working stress at extreme fiber due to bending. The plastic theory, in frames, depends on continuity and does not apply to simply supported, discontinuous beams. To be applicable, there must be a number of points of positive and negative bending moment.

A glance at Figure 1, which places the steel frame against the background of structural history, will dispose of Question 1. We really have *not* been building the steel frame for a long time. The fully continuous steel frame involving welding has an even shorter history, comprising only a few decades. Moreover, the number of fully continuous steel buildings now being erected, as a part of the total volume of steel frames, is an extremely small percentage. Finally, the theory *was* thought of earlier. General research and study began 25 years ago, almost concurrent with the adoption of welding for structures. An intensive program of investigation sponsored by Welding Research Council, American Institute of Steel Construction, Navy Department, and American Iron and Steel Institute has been in progress for 10 years at Lehigh University. Results of this program are the basis of a proposed manual of design.[1]

terminology

Each new theory creates its own language. An abridged vocabulary will help in discussing the plastic theory.

Plastic hinge. Due to yielding of all fibers in the cross section, a beam is able to rotate as if pinned, with a constant restraining moment.

Plastic modulus (Z). A measure of the plastic moment value of a cross section. Unlike the conventional section modulus (S), this is the static moment of area of the beam section about its neutral axis.

Plastic moment (M_p). The plastic moment is the bending moment that occurs at the location of all *plastic hinges*. It is the product of the yield stress and the *plastic modulus:* $M_p = f_y \times Z$.

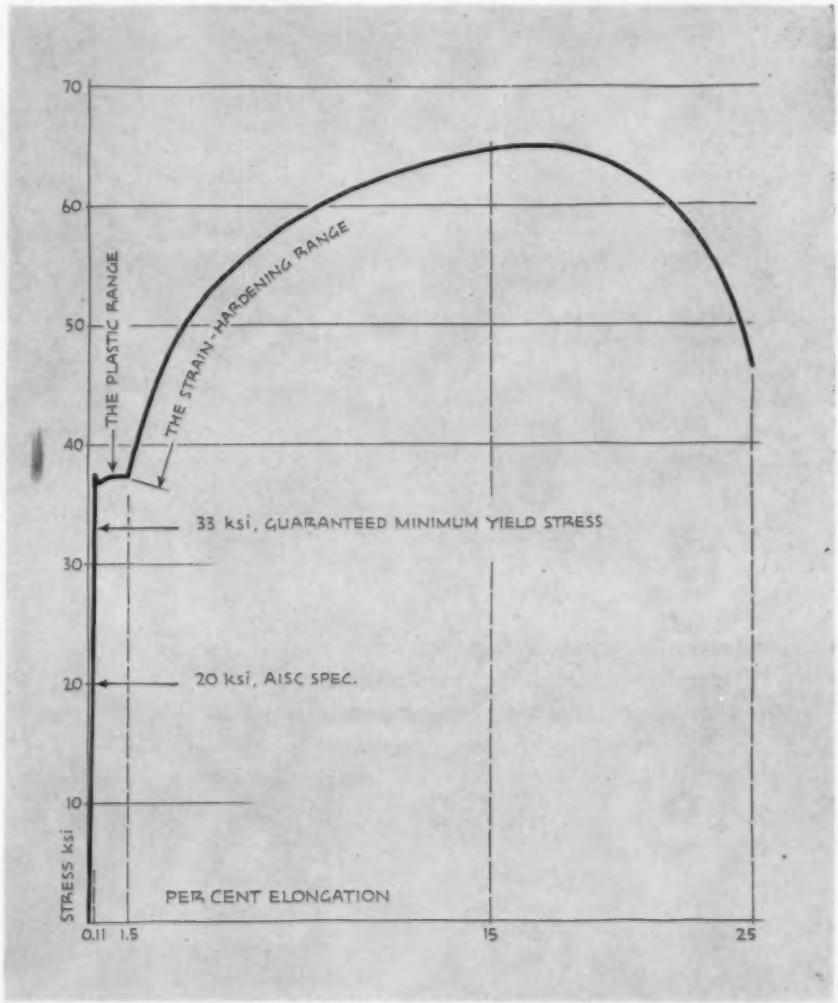
Shape factor. The ratio of the plastic modulus to the section modulus Z/S. It varies from 1.09 to 1.23 for WF and I sections and averages about 1.14.

Elastic range. The range of stresses, less than the yield stress, within which the steel will resume its original shape after removal of the load.

Plastic range. Range of stresses where permanent deformation occurs without increase in load *(Figure 2)*. Under usual working loads, these stresses are not reached in either elastic *or* plastic design.

Strain-hardening range. In this range,

Figure 2—stress ranges shown on familiar stress-strain diagram for structural steel.



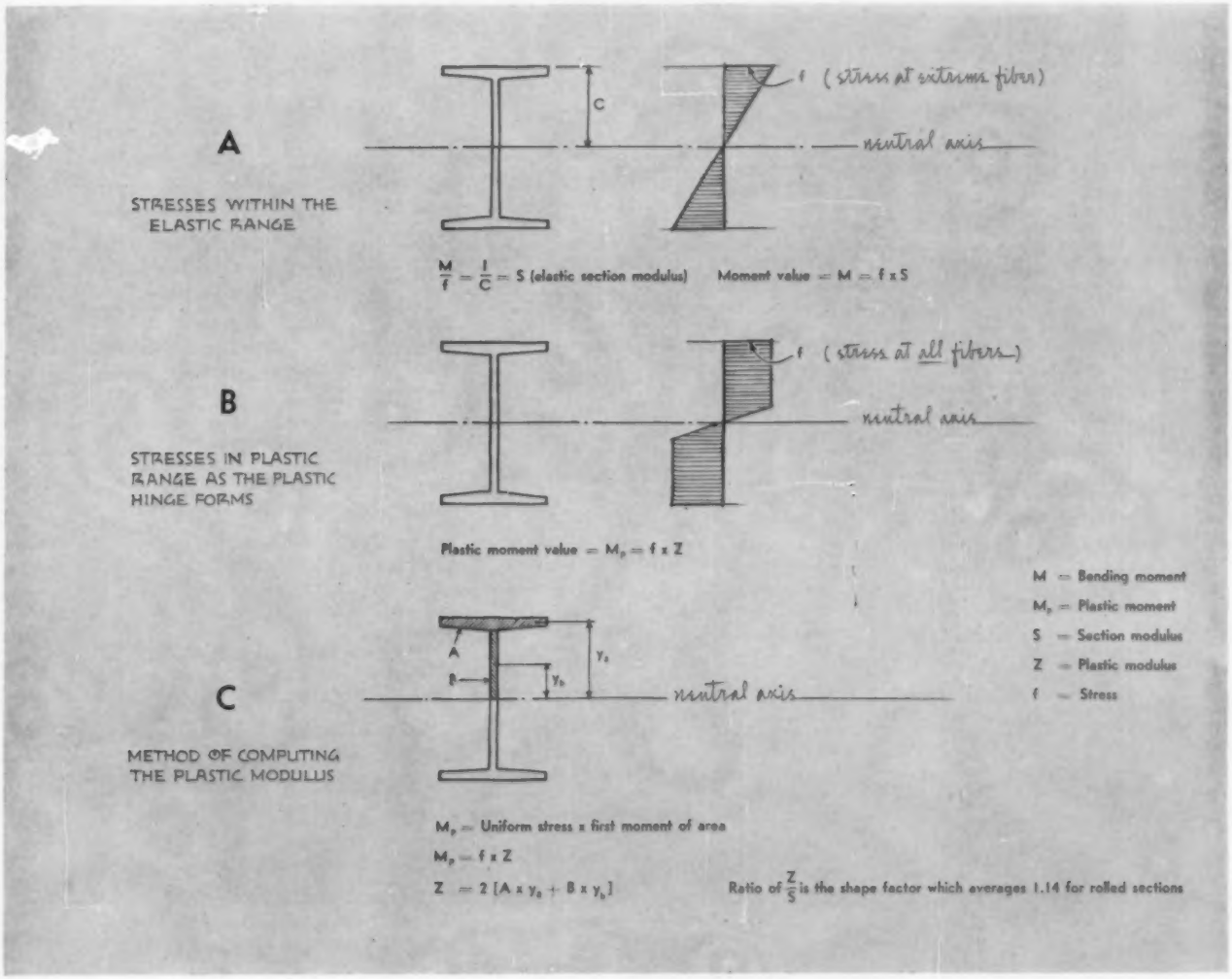
the steel shows an increase in strength due to cold working in the plastic range.

Mechanism. Similar to a *linkage* in mechanics *(Figure 4)* where the moment at critical points is equal to, but not in excess of, the *plastic moment* M_p.

When a plastic hinge forms, stresses at the extreme fibers have exceeded the yield stress and enter the plastic range. This shifts part of the burden to the fibers nearer the neutral axis. Finally, when all fibers are carrying approximately equal stresses and within the plastic range, the stress pattern resembles the outline, B, shown *(Figure 3)*. This changes the stress-bending relationship which previously (within the elastic range) had been $M = f \times I/c = fS$. This formula uses the section modulus (S) as a shape index which weighs the value of stresses further from the neutral axis more heavily and reduces the importance of those nearer the axis in accordance with the stress pattern, A, shown *(Figure 3)*. In the plastic range, the stresses become uniform and the static moment of area, which is the plastic modulus (Z), becomes the proper index. The suggested *load factor* includes the effect of two terms. One, already discussed, is the ratio of the yield stress to the previous working stress. This is 33/20 = 1.65. The other is the shape factor which expresses the ratio of the plastic modulus to the section modulus. This is about 1.14 for WF or I sections. The product or load factor is 1.65 x 1.14 or 1.88. When the working load is known, the load factor is used at once to establish the ultimate load. Actual load x 1.88 = ultimate load.

The redistribution of stresses in the

Figure 3—stresses in beams due to bending.


A
STRESSES WITHIN THE ELASTIC RANGE
C
f (stress at extreme fibers)
neutral axis
$\frac{M}{f} = \frac{I}{C} = S$ (elastic section modulus)
Moment value = M = f x S
B
STRESSES IN PLASTIC RANGE AS THE PLASTIC HINGE FORMS
f (stress at all fibers)
neutral axis
Plastic moment value = $M_p = f \times Z$
C
METHOD OF COMPUTING THE PLASTIC MODULUS
A
B
y_a
y_b
neutral axis
M_p = Uniform stress x first moment of area
$M_p = f \times Z$
$Z = 2 [A \times y_a + B \times y_b]$
M = Bending moment
M_p = Plastic moment
S = Section modulus
Z = Plastic modulus
f = Stress
Ratio of $\frac{Z}{S}$ is the shape factor which averages 1.14 for rolled sections

plastic hinge is followed by a redistribution of bending moments. How this affects the final design can be illustrated by a simple example; at the same time, an opportunity may be taken to compare sections chosen for the same load with simple, continuous, and plastic designs *(Figure 4)*. Since simple and continuous designs are familiar, let us consider the plastic method. The moments, as determined by elastic analysis, are shown in order to establish a basis for the ultimate load. The load is now assumed to increase. At the ends, where moment is greatest, the outer fibers yield and plastic hinges begin to form. When the plastic moment M_p exists, the ends rotate. Next, a plastic hinge forms at mid span. The beam is now a mechanism. It is also bearing its ultimate load and points of maximum moment are all at the value of M_p. We can now equate $W_uL/8$ to $2M_p$. Then, $M_p = W_uL/16$. But $W_u = 1.88W$ and it is possible to find the value of the plastic moment. By dividing this plastic moment by the yield stress, the plastic modulus is found. This is reduced to the section modulus by dividing by 1.14. A section can then be selected. In the new manual, plastic moduli will be available in tables.

Designs of simple and continuous beams under the same loading are also demonstrated *(Figure 4)* and a comparison of the results is given *(Figure 5)*. It is important to notice in the plastic design that the actual working stress at the ends is 25,000 psi—greater than the standard 20,000 psi, but well within the yield stress 33,000 psi.

For some time, the *AISC Specifications, Part III, Section 15* has allowed a stress of 20 percent greater than 20,000 psi (24,000 psi) under circumstances similar to that of the example given—namely, negative moment at points of interior support. This is tacit recognition of the effects formally recognized by the plastic theory and now having wider application. Weight savings and deflections are tabulated *(Figure 5)*. The savings of 33.4

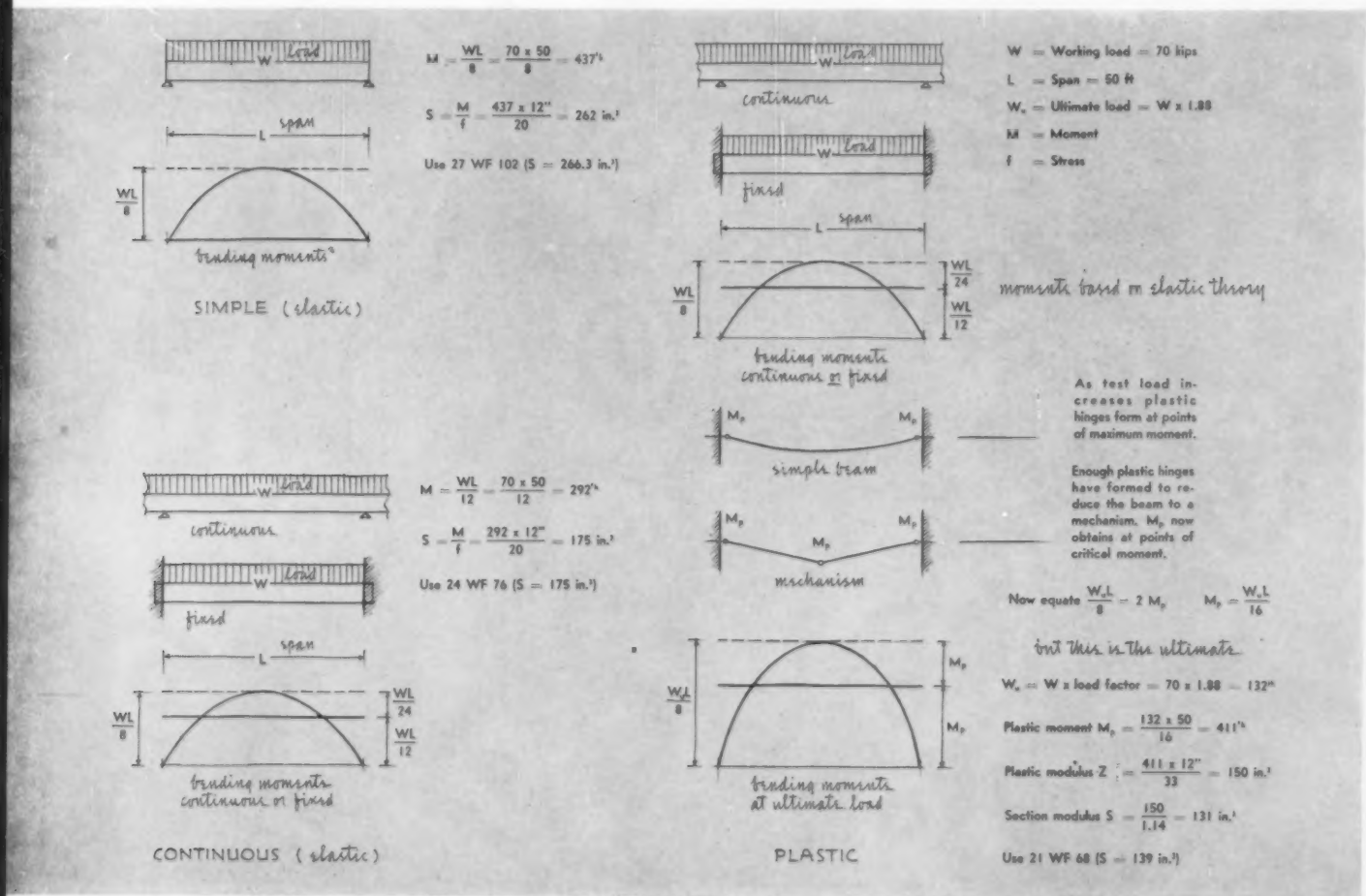

W = Working load = 70 kips
L = Span = 50 ft
W_u = Ultimate load = W x 1.88
M = Moment
f = Stress
load
span
bending moments
SIMPLE (elastic)
$M = \frac{WL}{8} = \frac{70 \times 50}{8} = 437'^k$
$S = \frac{M}{f} = \frac{437 \times 12''}{20} = 262$ in.³
Use 27 WF 102 (S = 266.3 in.³)
continuous
fixed
moments used in elastic theory
bending moments continuous or fixed
$M = \frac{WL}{12} = \frac{70 \times 50}{12} = 292'^k$
$S = \frac{M}{f} = \frac{292 \times 12''}{20} = 175$ in.³
Use 24 WF 76 (S = 175 in.³)
CONTINUOUS (elastic)
simple beam
mechanism
As test load increases plastic hinges form at points of maximum moment.
Enough plastic hinges have formed to reduce the beam to a mechanism. M_p now obtains at points of critical moment.
Now equate $\frac{W_uL}{8} = 2M_p$ $M_p = \frac{W_uL}{16}$
but this is the ultimate
W_u = W x load factor = 70 x 1.88 = 132^k
Plastic moment $M_p = \frac{132 \times 50}{16} = 411'^k$
Plastic modulus $Z = \frac{411 \times 12''}{33} = 150$ in.³
Section modulus $S = \frac{150}{1.14} = 131$ in.³
Use 21 WF 68 (S = 139 in.³)
bending moments at ultimate load
PLASTIC

Figure 4—comparison of beam designs: simple, continuous, and plastic.

percent over simple beams and 10.5 percent over elastically designed continuous beams are specific for this example only. General savings are to be expected.

Deflection, like stress, is greater than in continuous elastic design, but less than the deflection in simple beam design. While the presentation of plastic design *(Figure 4)* makes it appear longer, because of the explanatory material, it is actually simpler than the elastic design of continuous beams. One of the reasons for this is that, in concept, simple beams form as plastic hinges are created.

The foregoing design comparison illustrates the major differences in design thinking. It can be visualized that the sequence of forming and the alternate possible combinations of plastic hinges will vary in more intricate structures, such as multispan frames of unequal loading and spans; also portal frames. This problem is solved by trial and comparison, or by charts and formulas.

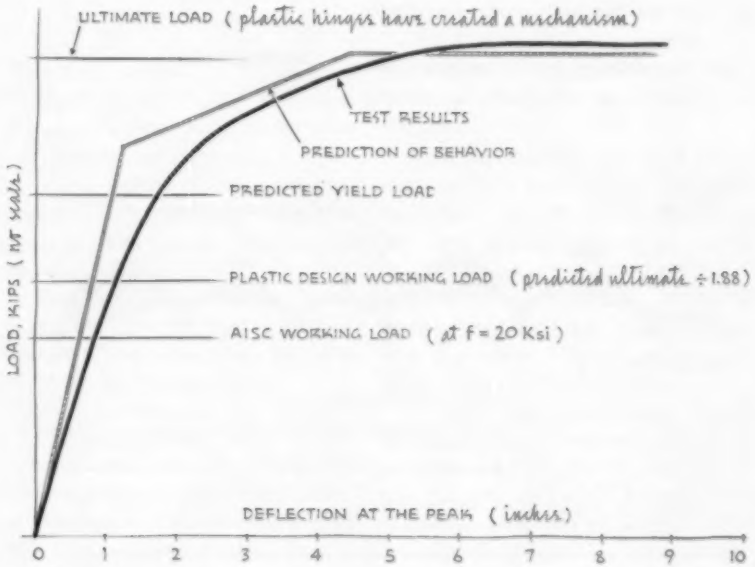
When critical moments coexist with axial load, a reduction of the plastic moment value is experienced. Predictions of ultimate load have been justified by full scale tests *(Figure 6)*. This is one of many tests described in *Interim Report No. 30: The Plastic Behavior of Structural Members and Frames*, by George C. Driscoll and Lynn S. Beedle, concerning work in the Fritz Engineering Laboratory at Lehigh.

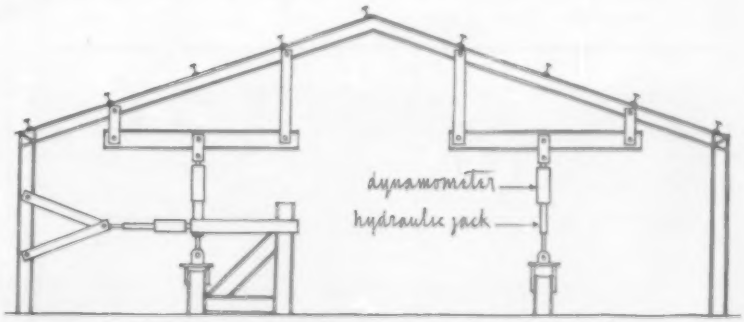
The plastic theory is applied, at present, only to one-story structures or single-tier layers of beams, although work is in progress to extend it to multistory frames. One of the first buildings in North America to be completed on the basis of a plastic design is shown *(Figure 7)*. In this case the load factor was 1.90 and the multispan, unequal loading is illustrated. The continuous beam is considered as one unit, with M_p evident at points of negative and positive moment. A light member was chosen and strengthened at locations where the ultimate moment exceeded M_p. A splice was made at a point of contraflexure. The columns were connected above and below. Savings in steel over simple-beam design were 22 percent. No comparison was made with continuous.

Condition	Section chosen	Weight saving, based on simple	Weight saving, based on continuous	Deflection 1/360 span	Deflection actual	Extreme fiber stress, actual
Simple	27 WF 102	0	0	1.67"	1.82"	19,600 psi
Continuous	24 WF 76	25.5%	0	1.67"	.64"	20,000 psi
Plastic	21 WF 68	33.4%	10.5%	1.67"	.89" (Less than 1/360 span)	25,000 psi (Within yield stress)

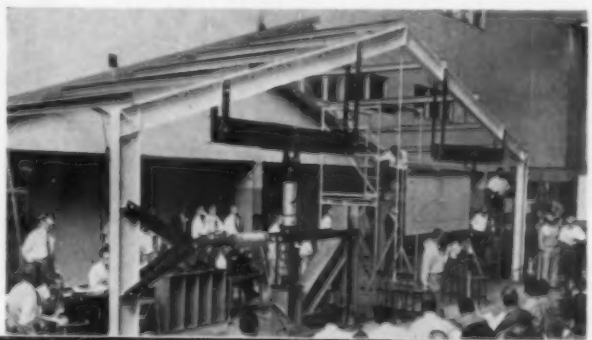
Figure 5—comparison of economy and deflections for beam designs shown in Figure 4.

Figure 6—tests at Lehigh, sponsored by AISC, verify calculated predictions of behavior under ultimate load.


ULTIMATE LOAD (plastic hinges have created a mechanism)
TEST RESULTS
PREDICTION OF BEHAVIOR
PREDICTED YIELD LOAD
PLASTIC DESIGN WORKING LOAD (predicted ultimate ÷ 1.88)
AISC WORKING LOAD (at F = 20 Ksi)
LOAD, KIPS (NT scale)
DEFLECTION AT THE PEAK (inches)
0 1 2 3 4 5 6 7 8 9 10



PORTAL FRAME TEST



summary

(1) Plastic design saves steel.
(2) It is more economical than elastic-designed continuous frames and much more so than simply supported structures.
(3) Deflections are greater than in continuous design, but not as great as in simple-beam design.
(4) Design procedure is simpler than in the case of continuous elastic design.
(5) Tests have verified its validity.
(6) Buildings here and abroad have proved safe when designed by this theory.
(7) It has not yet been applied to multi-story frames.
(8) Working stresses are usually above 20 ksi but still within the elastic range.
(9) The ultimate load is only a hypothetical one on which the working load is based.
(10) The theory really represents a truer picture of what happens in steel frames. A number of sections of the *AISC Specifications* recognize plastic effect. A new manual will make its appearance this year, indicating official approval by the *AISC*.

The author is indebted to T. R. Higgins, Director of Engineering and Research, and Edward R. Estes, Jr., Research Engineer, both of the American Institute of Steel Construction, for information and help in the preparation of this discussion. Much of the information discussed here is also based on work of Drs. Lynn S. Beedle, Bruno Thrulimann, and Robert Ketter, of Lehigh.

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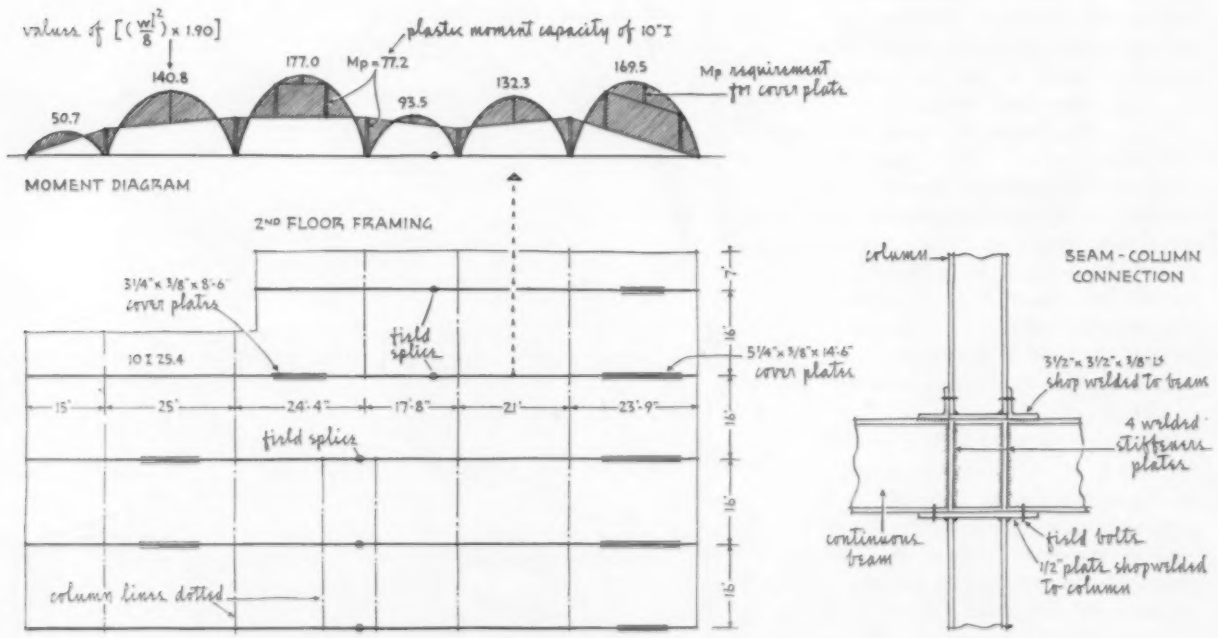


Figure 7—one of the first plastic-designed buildings in North America, built at Kingston, Ontario. Design was by Prof. Donald T. Wright, Queens University, Kingston.

Figure 8—as a result of a bombing during World War II, the involuntary removal of two columns forced this steel frame to redistribute its stresses without collapse.

The idea of rating interior lighting by the number of footcandles originated more than 40 years ago, when levels were very low. Then, the number of footcandles had a rough correspondence to the number of dollars spent. That sort of reference, of course, has little relationship at today's levels. Lighting ought to be specified and judged on its appropriateness to the function of the space that it serves. Footcandles in current lighting practice are discussed in this article and specific recommendations for commercial interiors, public buildings, and homes are tabulated.

Footcandles in Lighting Design

by J. L. Tugman*

Now is a good time to take a new look at footcandles. In the last five years, important uses have been discovered for them at much higher levels. We are making such applications effective with as much comfort as we do the more familiar ones, which are also strongly affected by the freer use of lighting in more advanced application. In scores of ways, footcandles at the new levels are giving us a new look at practically every type of seeing activity.

A few general reasons why footcandles (representing standards in practice) have been rapidly gaining ground are:

1. Footcandles are available at *lower cost* than ever before—one of the rare items cheaper in a period of rising costs.
2. The rapid advance in all fields of technology provides many occasions where more light *is needed* to see more detail promptly and accurately.
3. *Improved lighting techniques*, responsive to the needs of applied science in business and industry, are enlarging the variety of application types.
4. Rising costs, especially for labor, make the scientific application of footcandles an *efficiency tool* which increases safety and heightens morale.

Anyone comparing the 1957 *Footcandles in Modern Lighting Practice*[1] *(Table I includes commercial interiors, public buildings and homes)* with its 1952 predecessor will see that recommended levels in many fields have advanced sharply. The new reference shows many different applications in commercial and public buildings where practice calls for 100 or more ft-c.

There are assembly lines and inspection operations involving fine discrimination where 500 ft-c are recommended. The same level is suggested for feature displays in self-service stores, while show windows may go to 1000 ft-c for special displays. (Illumination three ft away from a common 150-watt project spotlamp comes to 1000 footcandles.)

For specialized tasks, where supplementary lighting is required on localized areas, levels of as much as 2000 ft-c are recommended. A surgical operation may require five times that much light. Welders who have to follow the intense brightness of an arc through a dense filter in their hoods can compensate for the

* *Lamp Division, General Electric Company, Nela Park, Cleveland, Ohio.*

[1] *Published by General Electric Company.*

1

1 Gymnasium, at Yale University, has a 100 ft-c at playing level. Rows of fluorescent lighting (two fixtures wide) are louvered, surface-mounted, and extend 15 ft beyond the ends of the skylight. Incandescent lighting in two-ft sq recesses is located above seating areas.

brightness of the arc with 2000 ft-c on the task.

The work world has scores of activities where the success of the job depends on 100 ft-c of general lighting. For printing plants, today's recommendations for imposing stones and proofreading call for 150 ft-c. The same level is standard for the finishing of photoengravings. Examples from the world of recreation may be even higher, although for different reasons. Many tasks require supplementary illumination, to the extent of 1000 to 2000 ft-c.

Satisfactory telecasting depends upon studio installations delivering up to 150 ft-c for black and white and 700 ft-c for color programs. Night baseball games require a 200 ft-c level.

An architect, recalling the average and subaverage lighting conditions he frequently encounters, may wonder what significance to attach to new footcandle recommendations. How are they relevant to the best over-all interests of his clients?

The simple answer is that by far the largest amount of space is accounted for in the new footcandle reference at levels under 50. For example, hotel and hos-

2

2 Bank interior, New York, has 55 ft-c lighting level at teller locations. Dropped luminous ceiling, slightly arched, has springings about seven ft from side walls. Around perimeter of ceiling, reflector lamps are recessed in square units. **3** Airline ticket office, San Francisco, maintains average illumination level of 75 ft-c. Contains luminous ceiling, surface-mounted fixtures, and concentric-louvered adjustable spots.

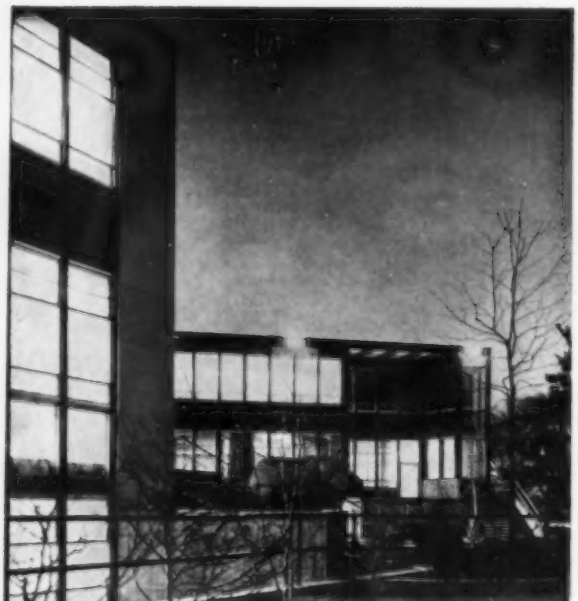
4, 5, and 8 At Cleveland Art Institute, both natural and artificial illumination were provided to serve the particular tasks for the various types of instruction offered. Luminous ceiling in silversmithing classroom provides 70 ft-c of diffuse light—more preferable for this type of work than light from small or concentrated sources. Painting classroom, however, has combination of fluorescent and filament equipment, since occupants are less concerned with uniformity and diffuse quality. Smaller filament units suit individual needs and provide accents and differences in general level. Average maintained is 50 ft-c.

6 Experimental office, at Nela Park, is equipped with two-lamp 40-w rapid-start troffer units, cross-louvered. Three rows of this equipment cover the ceiling and give it the name "trofferall." Although lighting level is variable (as high as 450 ft-c) occupants and visitors are said to invariably prefer levels near upper limits for working conditions.

7 From 2000 to 10,000 ft-c may be required in the operating room—according to the delicacy of the surgery. Tasks are difficult and may change with each sequence of operation. Near-daylight value can be provided at the actual locus of the operation.

3

4

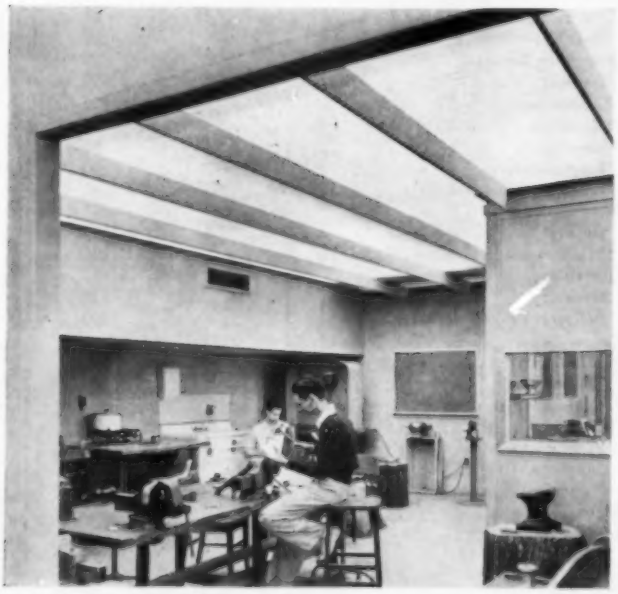


pital corridors call for five ft-c. Church and club auditoriums are listed at 10 ft-c while bank lobbies, court rooms, and many types of service areas take 20 ft-c. Fifty ft-c are recommended for classrooms and general offices.

It is toward this category of levels that the general situation progresses. The principle of creative destruction operates in the building industry as it does elsewhere. Obsolete structures are torn down to make more profitable parking lots; managements seek to salvage older space with air conditioning, new elevators, and better lighting. Of these improvements, lighting by advanced techniques changes appearance most. The full implementation of these lighting techniques is an integral part of contemporary design and decoration.

The most efficient use of interiors today depends on how one sees and feels in those environments. The growth of air conditioning indicates, in part, how comfortable we want to feel. Lighting relates to both senses—and is most effective when designed for a specific service. As this idea influences more people making lighting decisions in business and industry, standards advance.

5



6

7

8

Levels of Illumination[2]

	Footcandles Maintained in Service (Not Initial Values)
armories	
Drill	10
Exhibitions	30
art galleries	
General—Circulation Areas	10
On Paintings—Supplementary Illumination	50
auditoriums	
Assembly Only	10
Exhibitions	30
banks	
Lobby—Customer Areas	20
Cages and Offices	50
barber shops and beauty parlors	50
churches	
Auditoriums	10
Sunday School Rooms	20
Pulpit or Rostrum—Supplementary Illumination	20
Art Glass Windows—Lighted from Interior	
Light Color	20
Medium Color	100
Dark Color	200
club and lodge rooms	
Lounge and Reading Rooms	20
Auditoriums	10
court rooms	20
dance halls	5
fire engine houses	10
garages and hangars	
Storage	20
Repair and Maintenance—Washing	70
gasoline service stations	
Yard	10
Pump Island and Sales Room	100
Lube Room	
General	50
Lavatories	10
gymnasiums	
Exhibitions and Matches	100
General Exercising	30
Lockers and Shower Rooms	20
Assemblies	20
Dances	5
homes	
Dining Room, Living Room, Library, Sunroom, Entrance Hall, Stairways and Landings, Bedrooms and Bathrooms—	
General Illumination	10
Supplementary Illumination as follows:	
Reading — Casual Periods	20
Reading — Small Type, Prolonged Periods	50
Reading Piano Scores	
Elementary	10
Intermediate	20
Advanced	50
Writing	20
Children's Study Tables	50
Sewing	
Average for Casual Periods	20
Average for Prolonged Periods	50
Dark Goods and Fine Needlework	200
Mirrors	
Dressing Table — Light on Face	20
Bathroom — Light on Face	50
Game Tables	
Card Tables	10
Ping Pong	50
Kitchen	
General Illumination	10
Supplementary Illumination for Work Counter, Range and Sink	50
Laundry	
Supplementary Illumination for Ironer, Ironing Board and Tubs	50
Work Bench	
Supplementary Illumination	50
hospitals	
Autopsy	
General	30
Supplementary on table	200
Corridors	
Near Patients Room	5
For Services and Stairways	20
Near Operating Rooms	50
Emergency Rooms	
General	50
Supplementary	200
Examination	
General	50
Supplementary	100
X-Ray and Fluoroscopy	10
Laboratories	
General	50-100
Supplementary on Operating Table	2000-10,000
Obstetrics	
General	30
Delivery Table	200
Office, Library, Consultation Rooms, Kitchen, Utility Rooms, Nurses Stations, Pharmacy, Solaria, Serilizing Rooms and Therapy	50
Patients Rooms	
General	5
Supplementary for Intermittent Reading	20
Supplementary for Examinations	100
Nurses — General	20
Recovery Rooms	100
Surgery	
General	50
Supplementary on Operating Table	2000
Toilets	10
Waiting Rooms	20
hotels and restaurants	
Hotels	
Lobby	20
Dining Room	20
Kitchen	50
Guest Rooms — Supplementary Illumination	30
Corridors	5
Writing Rooms — Supplementary Illumination	30
Restaurants	
Dining Area	
Traffic Type	100
Leisure Type	20
Food Displays	100
Kitchens	50
library	
Reading and Stack Rooms	30
Research Study Areas	50
museums	
General — Circulation Areas	10
Special Displays — Supplementary Illumination	50
offices and drafting rooms	
Conference Rooms	50
Corridors and Stairways	20
General Offices	

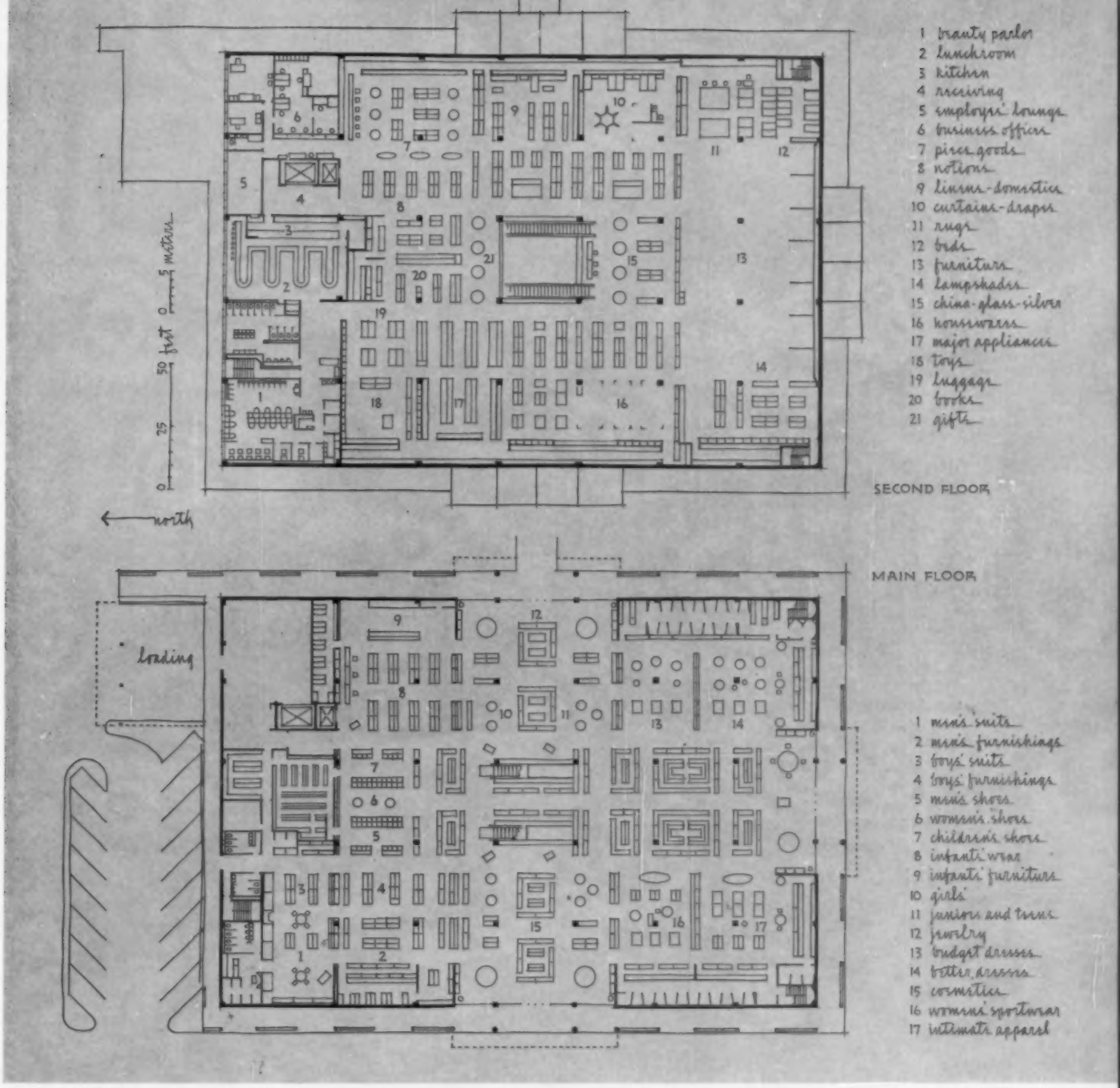
[2] Taken from "Footcandles in Modern Lighting Practice," a brochure published by General Electric Company, Large Lamp Department, Cleveland 12, Ohio. Additional recommendations for typical specialized industries and sports lighting are also included in the brochure.

for Commercial Interiors, Public Buildings, and Homes

	Footcandles Maintained in Service (Not Initial Values)
Casual Reading and Writing	50
Intermittent Close Work, Reading Shorthand Notes, Transcribing from Dictating Machines, Filing and Index References	70
Bookkeeping, Auditing and Accounting	100
Continuous Close Work, Computing, Designing, Reading Blueprints, Plans and Shorthand Notes	150
Lobby	
Entrance	70
Others	50
Mail Sorting and Vault	50
Private Offices	
Casual Reading and Writing, Conferences	50
Close Desk Work — See Task Descriptions Under General Offices	
Reception Rooms	50
Professional Offices	
Waiting Rooms	20
Consultation Rooms	50
Examination Rooms	
General	70
Supplementary	300
Dental Chairs	
General	100
Supplementary on Chair	1000
Drafting Rooms	
Prolonged Close Work, Art Drafting and Designing in Detail	150
post office	
Lobby	30
Sorting, Mailing, etc.	70
Storage	10
File Room	50
Corridors and Stairways	20
schools	
Auditoriums	
Assembly Only	20
Study Halls	50
Class and Study Rooms — Desk and Chalkboards	50
Corridors and Stairways	20
Drawing Room	100
Gymnasium	
General Exercising	30
Exhibition Games	100
Laboratories	
General Laboratory Work	50
Close Work — Supplementary Illumination	100
Lecture Rooms	
General	30
Demonstrations — Supplementary Illumination	100
Manual Training	
General	50
Close Work — Supplementary Illumination	100
Sewing Room—Supplementary Illumination	100
Sight-Saving Classes	100
service areas	
Corridors & Passageways	20
Elevators and Stairways	20
Locker Rooms	20
Shipping — Receiving	30
Storage and Stockrooms	20
Toilets and Washrooms	20
Parking Lots	5
stores and show windows	
Interiors	
Circulation Areas	20
Merchandising Areas	
Service Stores	50
Self Service	100
Interiors	
Show Cases, Wall Cases	
Service Stores	100
Self Service	200
Featured Displays	
Service Stores	200
Self Service	500
Stockrooms	20
Automobile Show Rooms	50
Show Windows and Open-Front Stores	
For Open-front Stores, the levels shown apply to display lighting. Daytime lighting — reducing effect of reflection in glass.	
High Brightness reflection (e.g., sky, white buildings in sunlight)	
General	200
Feature	1000
Low Brightness reflections (e.g., buildings in shadows)	
General	100
Feature	500
Nighttime lighting	
Main Business districts — highly competitive areas	
General	200
Feature	1000
Secondary Business districts, small towns	
General	100
Feature	500
studios	
Broadcasting	50
Commercial Photography	
General	20
Black and White Film	200
Color Film	500
Portrait Photography	
General	20
Illumination on Photgraphed Area	
Fast Film	100
Slow Film	200
Television *	
Studio	
General	30
Black & White Studio	50-150
Color Studio	350-700
Industrial, Sports, and Special Events	
Black & White	25-200
Color	250-1000
* Value selected depends on lens aperture and effect desired; scene often is not uniformly lighted.	
theatres and motion picture houses	
Auditoriums	
During Intermission	5
During Picture	0.1
Foyer	10
Lobby	20
transportation	
Cars	
Baggage, Day Coach, Dining, Pullman	50
Mail	
Bag Racks and Letter Cases	50
Storage	5
Street Railway, and Subway Cars	50
Depots, Terminals and Stations	
Waiting Room	30
Ticket Offices	
Ticket Rack and Counters	100
Other Areas	30
Rest Rooms, Smoking Rooms	20
Baggage Checking Office	20
Storage	5
Concourse	5
Platforms	5
Toilets and Washrooms	20

branch department store

location	North Miami, Florida
building design	Office of Meyer Katzman
architects-engineers	Gamble, Pownall & Gilroy
interior design	Office of Meyer Katzman
associate-in-charge	Richard Katzman



This colorful department store is one of two competing stores located at opposite ends of the mall of the 163rd Street Shopping Center. One of the most noteworthy aspects of the design, other than its bold use of tropics-keyed color, is the exploitation of the interior space, both horizontally and vertically.

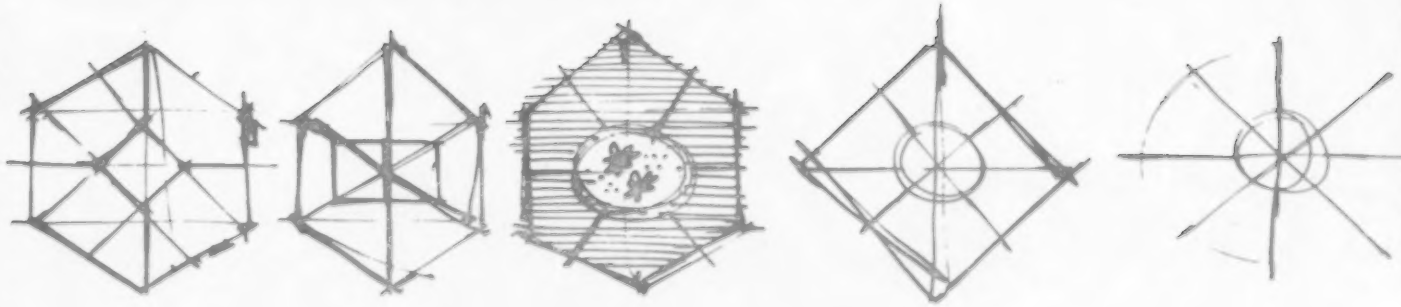
The central well, where moving stairs connect the two levels, extends the full 36-ft height of the interior to a luminous ceiling and provides dramatic and luring views from either level. Most partitioning and departmental subdividing are handled with pierced or see-through screens or separators that minimize the walls and invite the shopper along. This pierced-screen device also occurs on the exterior in panels alternating with open areas which border the 10-ft, covered walkway that surrounds the store. This walkway serves the three main entrances—the one to the east facing the mall; the other two opening from parking areas. The store was planned to provide maximum selling space; in this instance, perimeter reserves in the 165'x244' building were not of major importance in the plan, as the architects tell us "the warehouse is only a short distance away." East and west walls of the fully air-conditioned, reinforced-concrete structure are surfaced with sand-colored brick with a cross pattern projecting in relief; north and south walls are of cast stone. The exterior colonnade, "bird-in-flight" canopies, and pierced tile are white. General Contractor was Frank J. Rooney.

Photos: Alexandre Georges

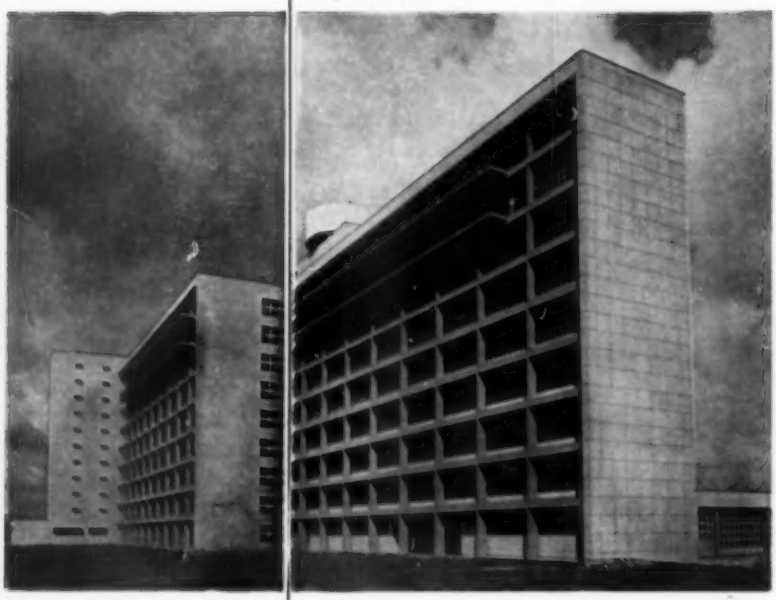
Asphalt-tiled and carpeted areas of shops on the ground floor (below right *and* acrosspage) *are a gold color, and ceilings are painted to match; a darker, ceramic tile is used in the men's shop* (above). *Full-height, moving-stair well is a dramatic, central element.*

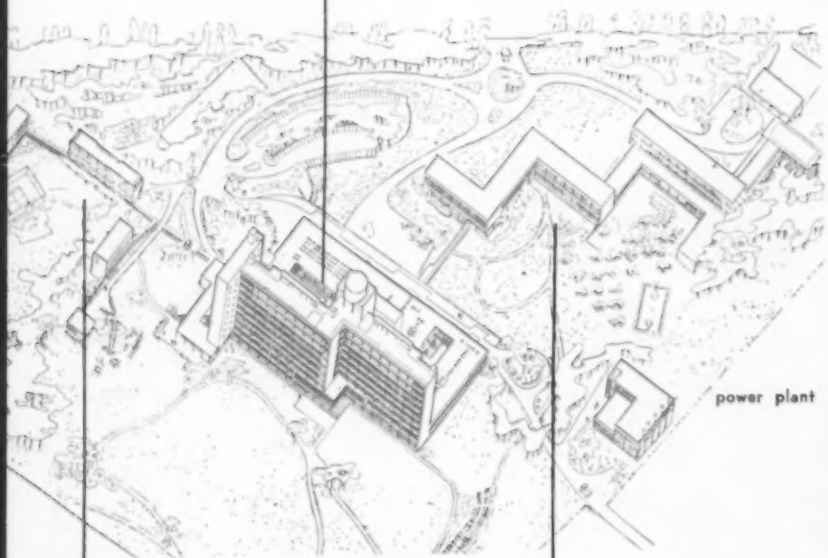
branch department store

On the upper floor, ceilings and most floor areas are deep-sea blue. An interesting aspect of the design is that the dropped ceilings float free from the perimeter walls, forming a light cove that brilliantly illuminates the entire perimeter area. Along with the various types of see-through partitions, this creates a sparkling, highly keyed surround for selling. Plaster fascias, exposed columns, and enclosure of moving stairs are white—either painted or of plastic wall material, where maintenance is a problem. The suspended planters in the central well are copper, 5 ft in diameter.



hospital block





power plant

staff quarters

infirmaries, chapel, mortuary

memorial hospital

location	St. Lô, France
architect	Paul Nelson
associated architects	Roger Gilbert, Marcel Mersier, Charles Sebillotte

Constructed with funds provided by the French Government, local authorities, and American Aid to France, this 400-bed general hospital is a memorial to the United States soldiers who gave their lives in World War II liberation of France.

A former hospital, destroyed in the war, had 350 beds; a temporary Red Cross Hospital of 200 beds was found to be too small. Careful analysis finally determined the 400-bed figure, with 80 beds set aside for tuberculosis patients, and 20 beds for patients with contagious diseases.

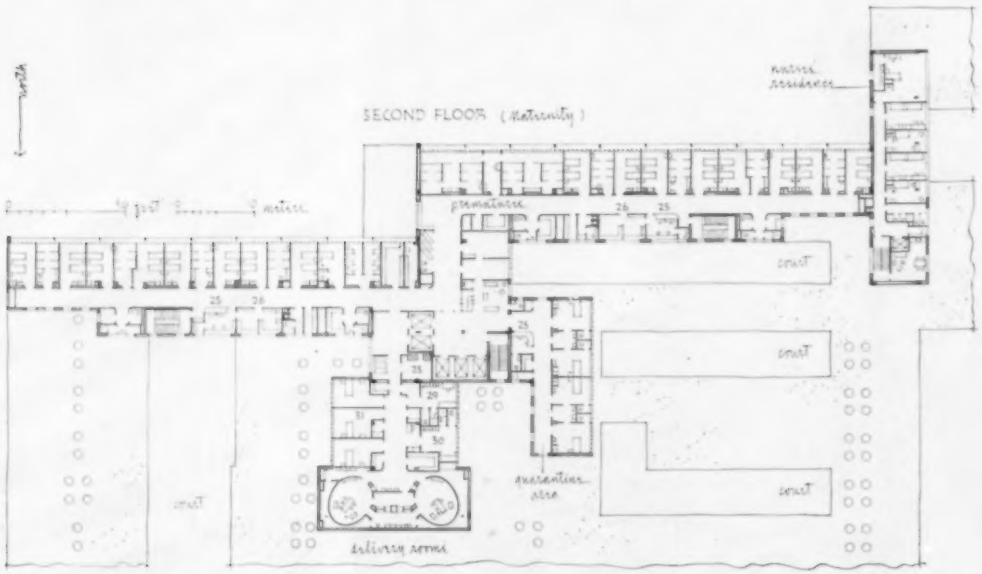
In developing the skilful plan, the architects adapted to the particular conditions at St. Lô many of the standards established by U. S. Public Health Service. It is interesting to learn that the late Fernand Leger, the artist, was much concerned with the development of the hospital, and contributed the symbolic mosaic panel near the entrance (*across page*).

One of the most successful plan elements of the reinforced-concrete structure is the separation of the several channels of traffic and their relation via corridors to the central bank of five elevators—two reserved for patients' exclusive use; three for general use. Since the site slopes away to the north, truck docks

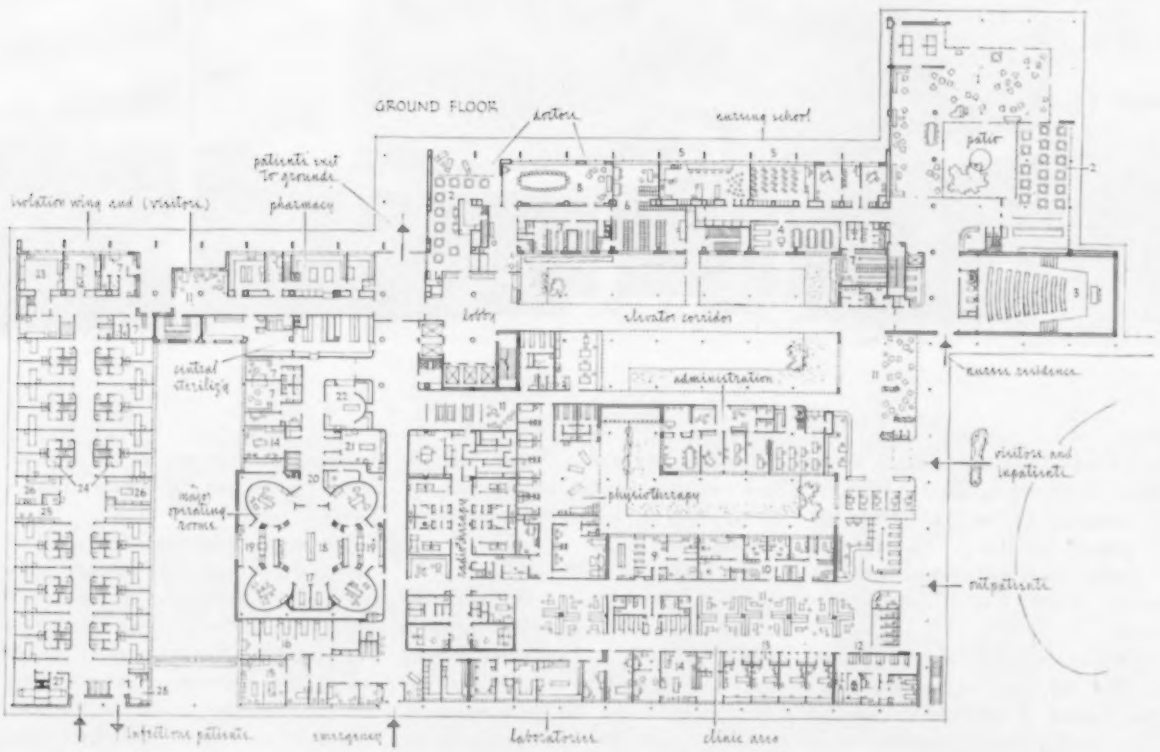
for delivery of food and supplies and the entrance for the hospital staff are at a basement level. Here also are located the main kitchen and a variety of storage and supply rooms.

In the ground-floor plan, separate entrances around the perimeter are provided for inpatients; outpatients; visitors; nurses; emergency cases; isolated patients (communicable diseases) and their visitors. Thus, the various traffic lanes are segregated *outside* the building, though all communicate with the central elevator block by means of corridors. Several interior courtyards are introduced at this level and many of the rooms—administrative offices; a portion of the clinic area; the nurses' lounge; and isolation wing—look out on landscaped areas. Other interior spaces are daylighted through plastic skylights. A truly remarkable design innovation is the egg-shaped operating room (SELECTED DETAILS), four of which are grouped around a central sterile zone. Their multiplicity of lighting possibilities gives surgeons the greatest freedom of choice.

A very special provision is included for visitors to patients in the isolation wing—sealed, glass-enclosed booths between each pair of rooms, where visitors may talk to patients by microphones. To reach these, visitors pass from the main



1 lounge
2 cafeteria
3 auditorium
4 library
5 classroom
6 medical records
7 lockers
8 reading, conferences
9 tuberculosis clinic
10 eye-ear-nose
11 waiting area
12 v.d. clinic
13 obstetrics, pediatrics
14 minor surgery
15 emergency operations
16 observation ward
17 anesthesia
18 sterile zone
19 clean-up room
20 dark room
21 cystoscopy
22 fractures
23 kitchen
24 visitors' cubicle
25 nurses' station
26 utility room
27 clean linen
28 discharge bath
29 doctors' office
30 nurses and midwives
31 labor rooms



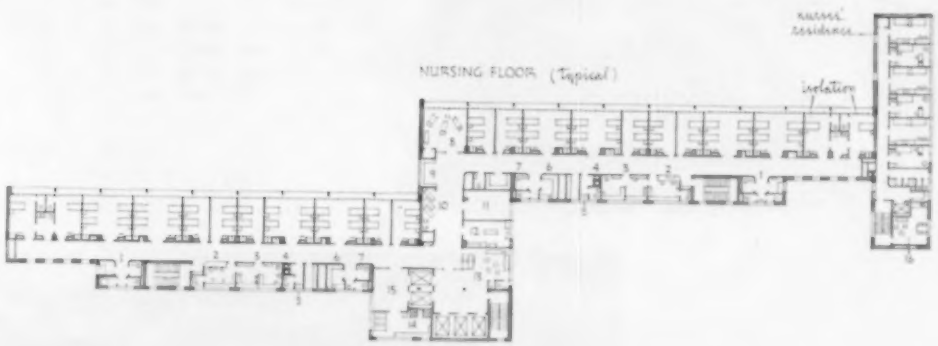
waiting room along a corridor, through the elevator lobby, downstairs to the lower level, and so up to the booths by separate stairs. The maternity accommodations occur on the second floor and include two delivery rooms, egg-shaped like the operating rooms on the ground floor. Nurseries for four babies are located between each pair of patients' rooms. The nurses' residence occupies the block at the western end of the building.

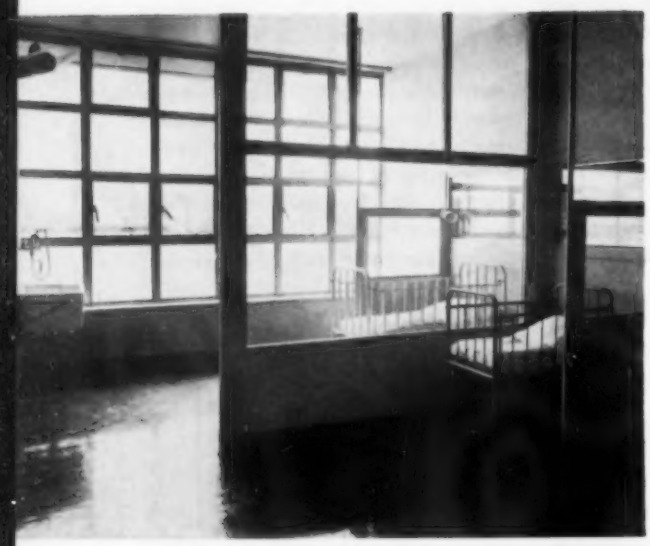
Each typical nursing-unit floor (*below*) contains two units, with 30 beds each, with elevators at the center and each unit controlled from a central nurse's station. Patients' rooms occupy the south side of the floors; service rooms line the north wall.

The top floor (plan *overpage*) is designed with outside balconies for each room, and is reserved for tuberculosis patients or patients who must stay at the hospital for long periods.

A factor of the design that unfortunately is not apparent in the black-and-white photographs is the considered use of color. The three walls that a patient faces are pale gray; the wall behind the beds is some strong, though not insistent, color. The reflected light from the colored wall creates a changing pattern of tones on the gray walls and, we are told, promotes a patient's recovery. One visitor to the hospital was heard to remark: "But where are the sick people?"

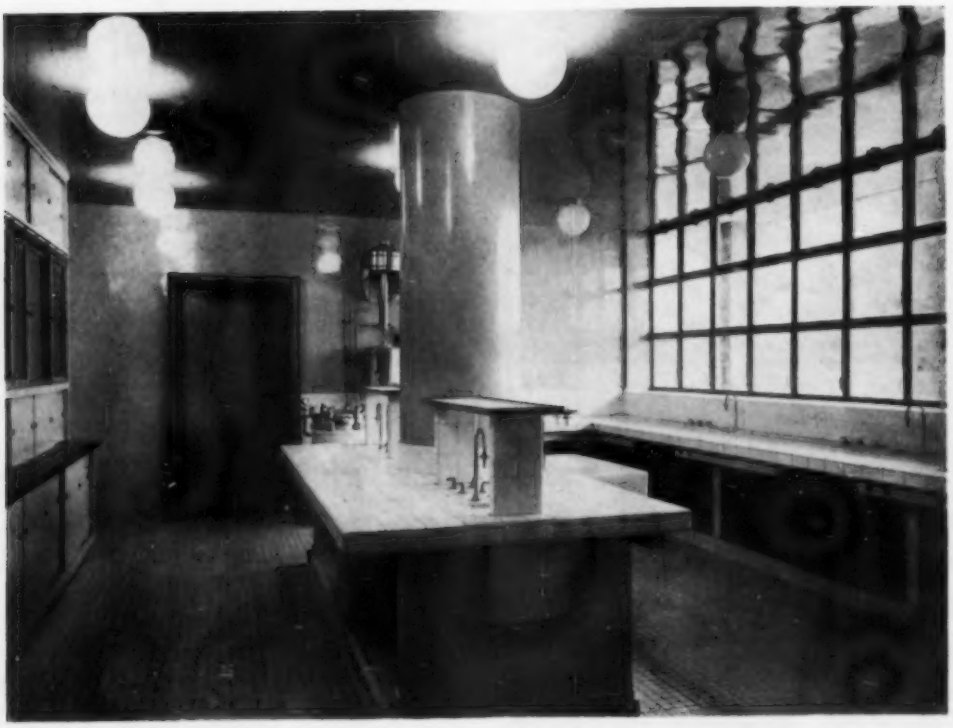
1 patients' baths
2 nurses' station
3 utility room
4 incinerator & linen chutes
5 janitors' closet
6 flower room
7 bed pans
8 solarium
9 waiting-consultation
10 wheel chairs & stretchers
11 doctors' office
12 treatment room
13 visitors' waiting room
14 floor pantry-kitchen
15 patients' and service vestibule
16 living room or laundry (alternating floors)





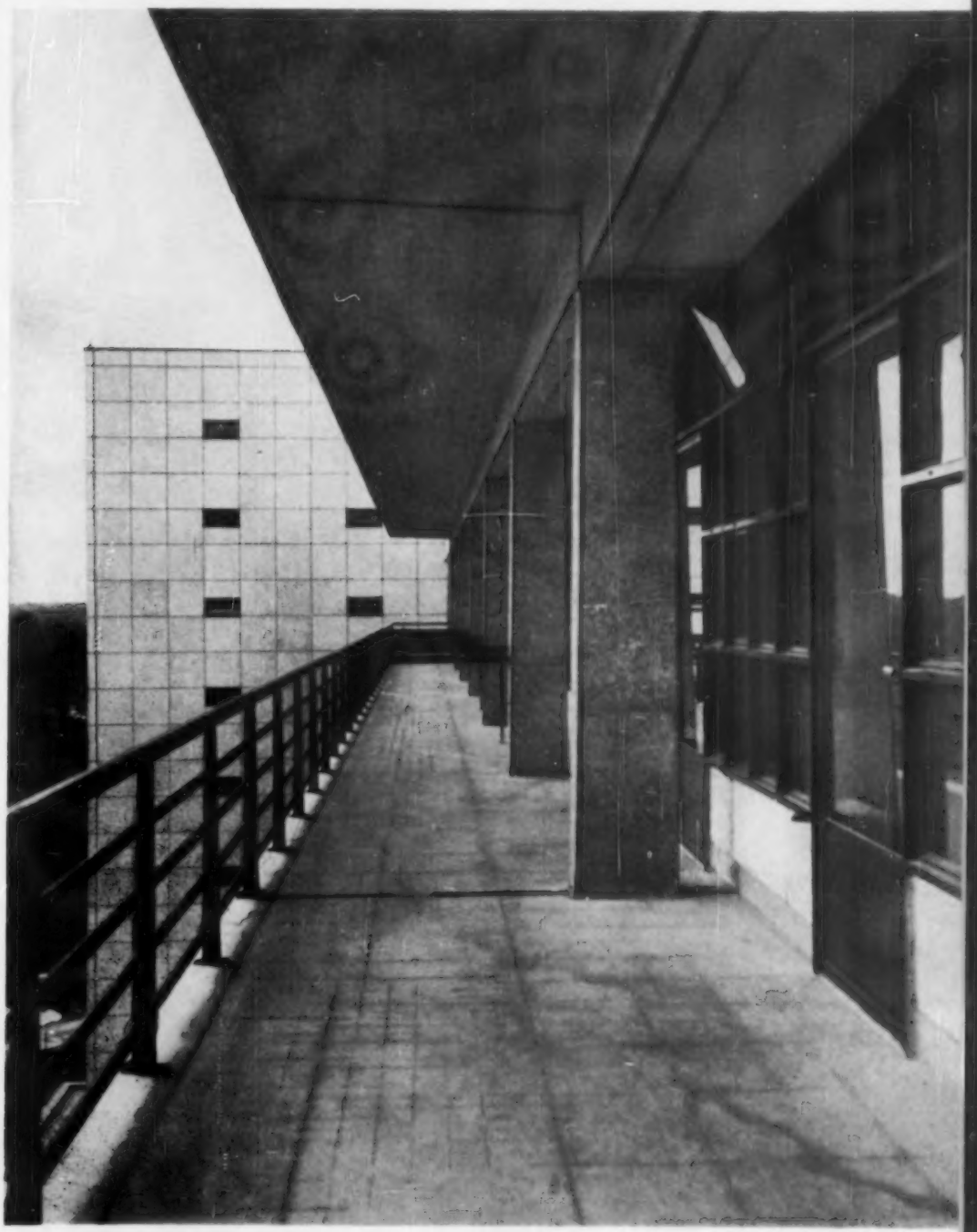
Window areas are composed of a modular grid, panels of which may be fitted with operable panes, fixed glass, clear or obscure glass. On the maternity floor (above) *nurseries for four babies occur between pairs of rooms.*

Photos: Etienne Bertrand Weill



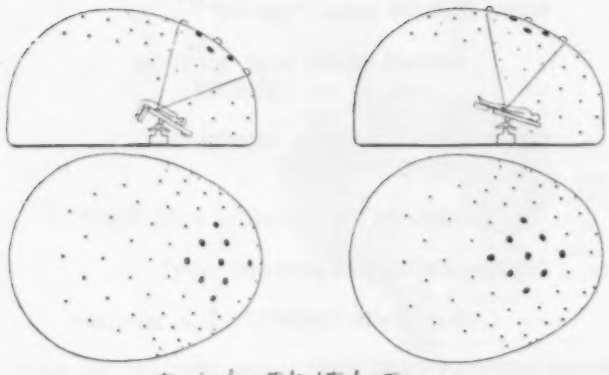
A typical laboratory (right) *looks out on a landscaped courtyard.*

Between each pair of the egg-shaped operating rooms is a clean-up room (below).

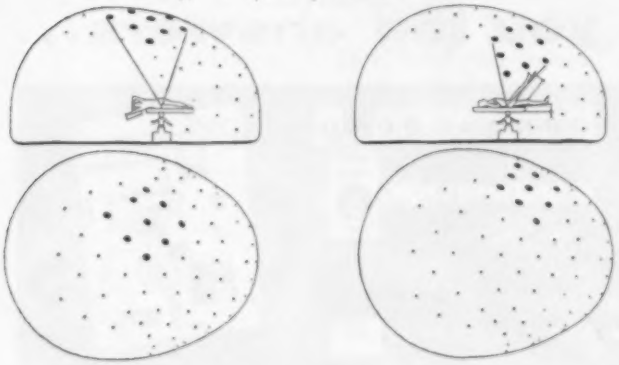


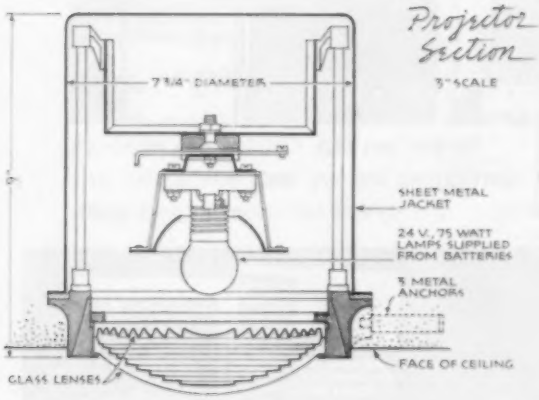
Balconies adjoin the rooms of the topmost floor, which is chiefly for tuberculosis patients.

1 patients' baths
2 nurses' station
3 utility room
4 incinerator & linen chutes
5 janitors' closet
6 flower room
7 bed pans
8 doctors' office
9 waiting-consultation
10 wheel chairs & stretchers
11 radiotherapy
12 treatment room
13 visitors' waiting
14 floor pantry-kitchen
15 patients' & service vestibule
16 examination room
17 patients' dining room
18 solarium
19 living room
20 living room or laundry (alternating floors)



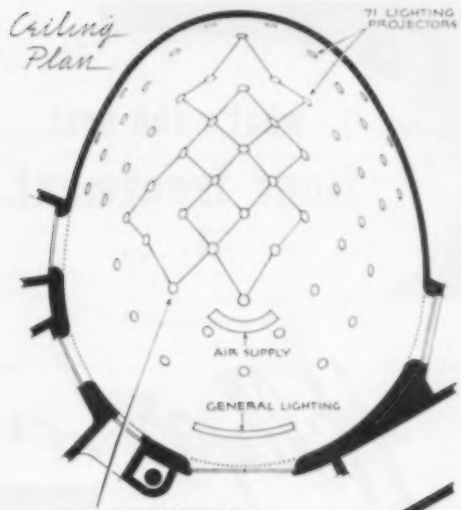
Typical spot-light clusters

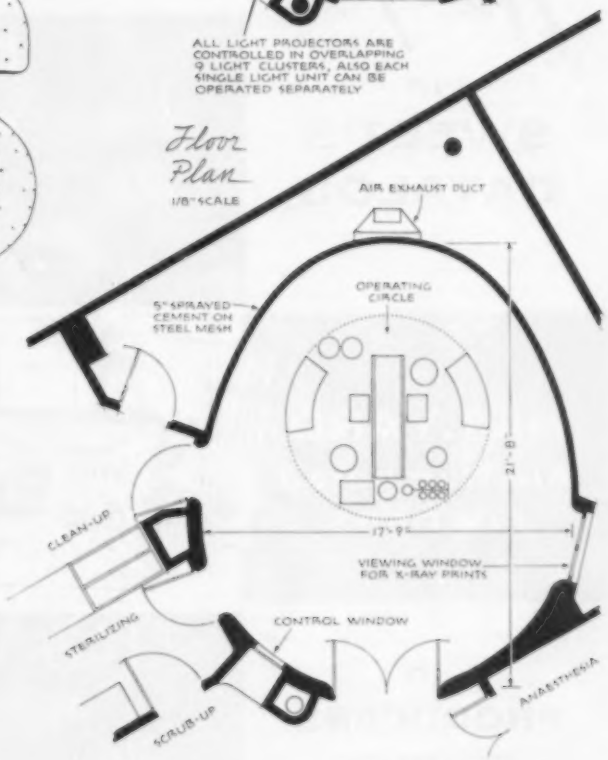




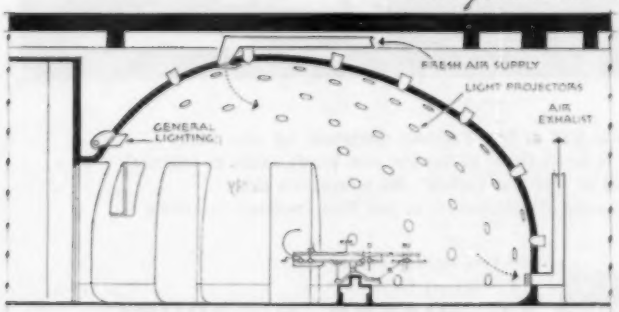
Projector Section

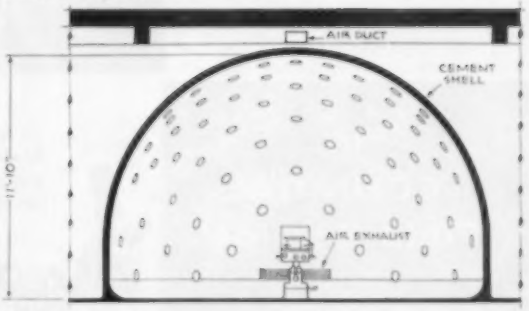
3" SCALE


Ceiling Plan
71 LIGHTING PROJECTORS
AIR SUPPLY
GENERAL LIGHTING
ALL LIGHT PROJECTORS ARE CONTROLLED IN OVERLAPPING 9 LIGHT CLUSTERS, ALSO EACH SINGLE LIGHT UNIT CAN BE OPERATED SEPARATELY



Longitudinal and Cross Sections 1/8" SCALE





ST. LO HOSPITAL, Normandy, France

Paul Nelson, Architect

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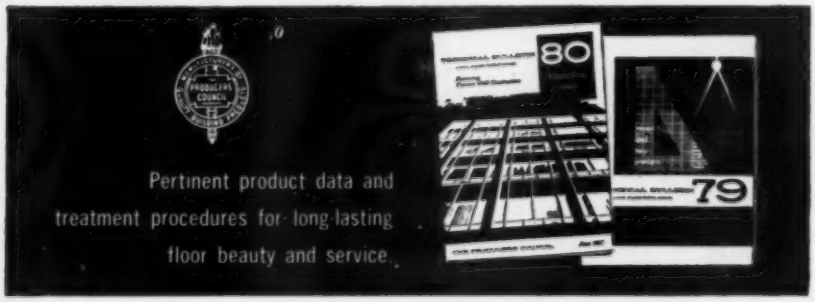

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Let's Omit "or equal"

by Harold J. Rosen

Having spent a good many years writing specifications for the Federal Government, I had been led to believe that you could not exclude anyone from bidding on public work. Therefore when Federal Specifications were not available to which you could reference materials, you specified about three brand names and then quoted the "or equal" clause, which would permit everyone to bid. This same philosophy was used with respect to private work that I performed. However, a goodly number of specifications writers on nonpublic projects use the term "or equal" *after* specifying several brand names.

Some specifications writers have long insisted that the "or equal" clause be dropped from specifications but no concerted effort has been made to get all specifications writers to conform to this standard. The evils inherent in using an "or equal" clause have not really been pointed up sufficiently to expose its shortcomings. Nor has there been a satisfactory substitute which would have permitted an easy break from this habit.

Having spent a year now in private practice, I can see more clearly the disadvantages of using the "or equal" clause and fortunately a satisfactory substitute has been recommended by the Building Research Institute's first Specifications Workshop, which was held in February, 1957. In permitting the term "or equal" to be used in the specifications, it leads to a conflict between the Architect and the Contractor as to who should determine the equality of materials proposed for substitution. If the Architect modifies the language to say "or equal in the opinion of the Architect," the difficulty is still not resolved since the Bidder might be able to secure a lower price on some material other than that specified but be in doubt as to whether the Architect will approve it. If the Bidder takes a chance on this lower-priced material, he risks being forced to buy the higher-priced material specified. If the Bidder did not take this chance he would lose the advantage of the lower price which might make the difference between winning or losing the contract.

The "or equal" clause also increases the amount of office work the Architect must perform in order to chase down all of the "or equal" substitutions which are submitted by Contractor for approval.

Many difficulties are avoided if the "or equal" clause is dropped. The Contractor cannot claim that his bid was predicated on the use of another material, which the Architect refuses to accept as an "or equal." By basing their bids on the materials specified, the Bidders are competing on the same level—making for fairness on competitive bidding.

The Architect has better control of the job when the "or equal" clause is omitted. With an "or equal" clause the Contractor is constantly striving to use other materials, especially if there is a price advantage to him after the contract is let. In many cases, the Owner does not benefit from these price differentials, the substitution being made solely on the basis of "or equal without change in contract price." The Architect should insist that the products which he has specified and with which he is familiar and has confidence in, should be used.

At the meeting of the Building Research Institute's Specification Workshop, the following paragraph was recommended for inclusion in the Special Conditions of the Specifications.

"VARIATIONS FROM MATERIALS SPECIFIED:

"Materials or products specified by name of manufacturer, brand, trade name, or catalog reference shall be the basis of the bid and furnished under the contract, unless changed by mutual agreement. Where two or more materials are named, the choice of these shall be optional with the Contractor. Should the Contractor wish to use any materials or products other than those specified, he shall so state, naming the proposed substitutions and what difference if any will be made in the contract price for such substitution, should it be accepted."

It was further emphasized by the Workshop that reference to a single name or product in private work should be discouraged, except in the case of an Owner's firm desire in private work, because it tends to eliminate competition.

There is a fallacy about the use of the "or equal" clause in public work. On the Federal Government level, I believe that the Comptroller General has ruled that at least three names of Manufacturers be used when no Federal Specifications exist for a given material. The ruling has not required the use of an "or equal" clause to open up the bidding, although Federal Agencies have included the "or equal," in order to be aboveboard. Bidding in public work is a privilege—not a right—and the Government, as an Owner, has a right to protect its own interests by demanding that it receive a dollar's worth of value for a dollar spent. A Bidder on public work should prove that his material is equal to that specified and it should not be incumbent upon the Government to test every substitution to determine its equality.

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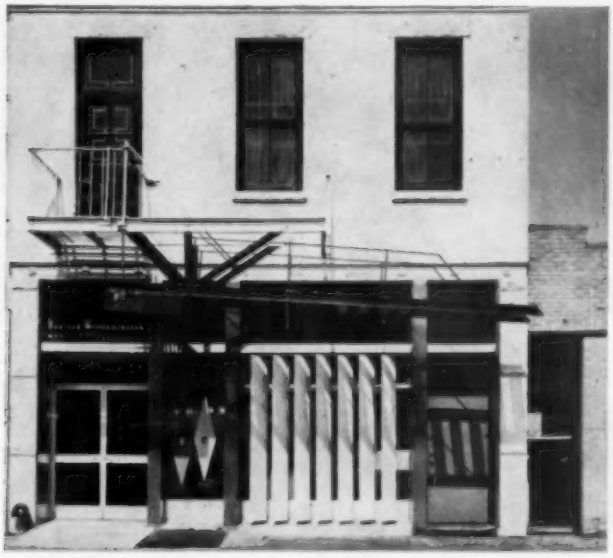
Louise Sloane

remodeling-3

Both of the remodeling projects that we present this month are concerned with the virtual reclaiming of out-worn factory-storage buildings; with limited budgets; and with specialized uses, since one building became a clinic, the other a photographic studio.

The Bedford Williamsburg Medical Group Clinic, in Brooklyn, New York, was planned, designed, and completed in about four months, as a working center for a new group of young doctors with a time limit in which to begin practice. To Basil Yurchenco, two intriguing aspects of the problem were: the changeover of an 1870 shack building, built originally as a blacksmith shop then used for various manufacturing and storage purposes; and the need for giving this building (occupied on the second floor by a garment factory) a positive quality—on a very low budget—in a negative slum environment. Architect Yurchenco's diversified skills (including the design of some of the furniture, the improvisation of a mural) achieved strikingly successful results.

The photographic studios of Jason Hailey and Dale Healy in Los Angeles, California, provide the ultimate in function and efficiency as a result of Architect Craig Ellwood's carefully planned conversion of a building occupied, at one time or another since its 1920 construction, by a silent film theater, a garage, a factory, a store, and a warehouse. With minimum structural changes, and depth research into the client's functional needs, Ellwood has planned interior space that fulfills the complex demands made by the activities conducted in a photographic studio.

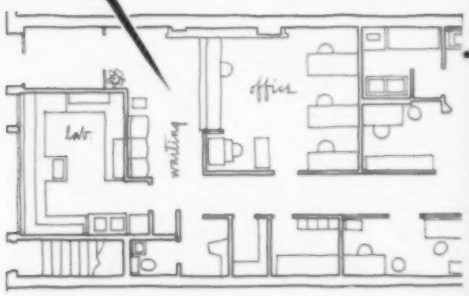


Posterlike color and linear design serve to set the clinic front boldly apart from its less sightly neighbors, as well as to bring it easily to the attention of neighborhood patients.

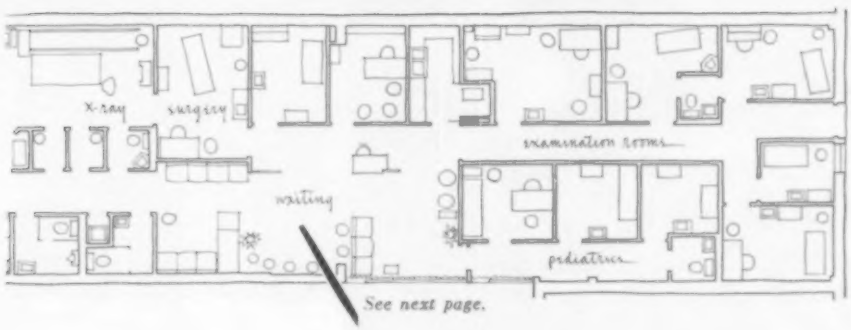
Photos: Louis Reens

remodeling

client | Bedford Williamsburg Medical Group
location | Brooklyn, New York
architect | Basil Yurchenco



Colorful and diverting highlights of the clinic's reception area are the architect-designed mosaic tile panels on the appointment desks, and the architect-improvised mural, along one entire wall. "Confetti" asphalt-tile floor repeats vitalizing primary colors; warm off-white walls and ceiling offer agreeable contrast. Photos: Louis Reens



See next page.

remodeling

Medical Group Clinic *(continued)*

Waiting room supplements functional overhead lighting with Noguchi's sculptural paper lantern and uses decorative fabrics at window, white-painted brick walls, corktoned tile in stripe pattern for warmth and color effect. Architect-designed desks contrast natural woods and metal with leather and textured upholstery materials.

data

cabinetwork

All: architect-designed counters, appointment desks/ ¾" plywood boxes with Formica "Realwood" veneers, metal legs, mosaic tile panels/ executed by Cuevas Martinez, 2150 Amsterdam Ave., New York, N. Y.

doors

All: flush/ mahogany veneer/ United States Plywood Corp., 55 W. 44 St., New York 36, N. Y.

equipment

Plumbing: Universal-Rundle Corp., New Castle, Pa.

Heating: McDonnell & Miller, Inc., 3500 N. Spaulding Ave., Chicago 18, Ill.

Ventilation: ILG Electric Ventilating Co., 2870 N. Pulaski Rd., Chicago, Ill.; The Gallaher Co., 4106 Dodge, Omaha, Neb.

furniture, fabrics

Desk Chairs: Herman Miller Furniture Co., Zeeland, Mich.

Sofas, Desks, Counters: modular/walnut/ Lehigh Furniture Corp., 16 E. 53 St., New York 22, N. Y.

Occasional Chairs, Stack-up Coffee Table: Bonnier's Inc., 605 Madison Ave., New York 22, N. Y.

Upholstery Fabrics: Herman Miller Furniture Co.; Boris Kroll Fabrics, Inc., 220 E. 51 St., New York 22, N. Y.; Anton L. Maix, Inc., 48 E. 53 St., New York 22, N. Y.

Draperies: Laverne, Inc., 160 E. 57 St., New York 22, N. Y.

lighting

Fixtures: recessed, incandescent and fluorescent/ Litecraft Mfg. Corp., 8 E. 36 St., New York 16, N. Y.

Suspended Fixtures: Finland House, 41 E. 50 St., New York 22, N. Y.; Bonnier's Inc.; Litecraft Mfg. Corp.; Georg Jensen, 667 Fifth Ave., New York 22, N. Y.

Sculptured Lantern: Noguchi/ Bonnier's Inc.

walls, ceiling, flooring

Walls: painted in Colorizer paints/ Brooklyn Paint & Varnish Co., Inc., 50 Jay St., Brooklyn, N. Y.

Ceiling: perforated wood fiber tiles/ U. S. Gypsum Co., 300 W. Adams St., Chicago 6, Ill.

Flooring: "Corktone"/ asphalt tile/ Kentile, Inc., 58 Second Ave., Brooklyn 15, N. Y.; Matico "Confetti"/ Mastic Tile Corp. of America, Houston, Tex.

remodeling

data

cabinetwork

Job-Built: Philippine mahogany, natural.

Countertops: Formica Co., 4633 Spring Grove Ave., Cincinnati 32, Ohio.

doors, partitions, windows

Wood Slab Doors: General Veneer Mfg. Co., 8652 Otis St., South Gate, Calif.

Glass Entry Door Frames: Acme Metal Molding Co., 1923 S. Los Angeles St., Los Angeles, Calif.

Glass: Pittsburgh Plate Glass Co., Pittsburgh, Pa.

Hinges: "Pittco"/ Pittsburgh Plate Glass Co.

Partitions: 2x3 and 2x4 wood studs, 16" o.c. with lath-and-plaster finish/ U. S. Gypsum Co., 2322 W. Third St., Los Angeles, Calif.

Sliding Steel Sash: Arcadia Metal Products, 801 S. Acacia St., Fullerton, Calif.

equipment

Plumbing Fixtures and Trim: Crane Co., 321 E. Third St., Los Angeles, Calif.

Water Heater: General Water Heater Corp., Front St. at Magnolia Blvd., Burbank, Calif.

Forced-Air Heating & Ventilating: The Lennox Furnace Co., 2041 Saybrook St., Los Angeles, Calif.

Door Locksets: Schlage Lock Co., 3467 W. Eighth St., Los Angeles, Calif.

Door Hinges: Stanley Works, 784 Lake St., New Britain, Conn.

furniture, fabrics

All: Herman Miller Furniture Co., Zeeland, Mich.

lighting

Wall Brackets: Lightolier, Inc., Jersey City 5, N. J.

Hanging Ceiling Fixture: Gruen Lighting Co., 8336 W. Third St., Los Angeles 48, Calif.

Recessed Ceiling Fixture: Pryne & Co., 526 E. 12 St., Los Angeles, Calif.

walls, ceilings, flooring

Walls, Ceilings: plaster/ painted light beige/ U. S. Gypsum Co.

Reception Room: Douglas Fir Siding/ stained gray.

Floors, Reception Room and Offices: terrazzo/ black and beige chips in white cement.

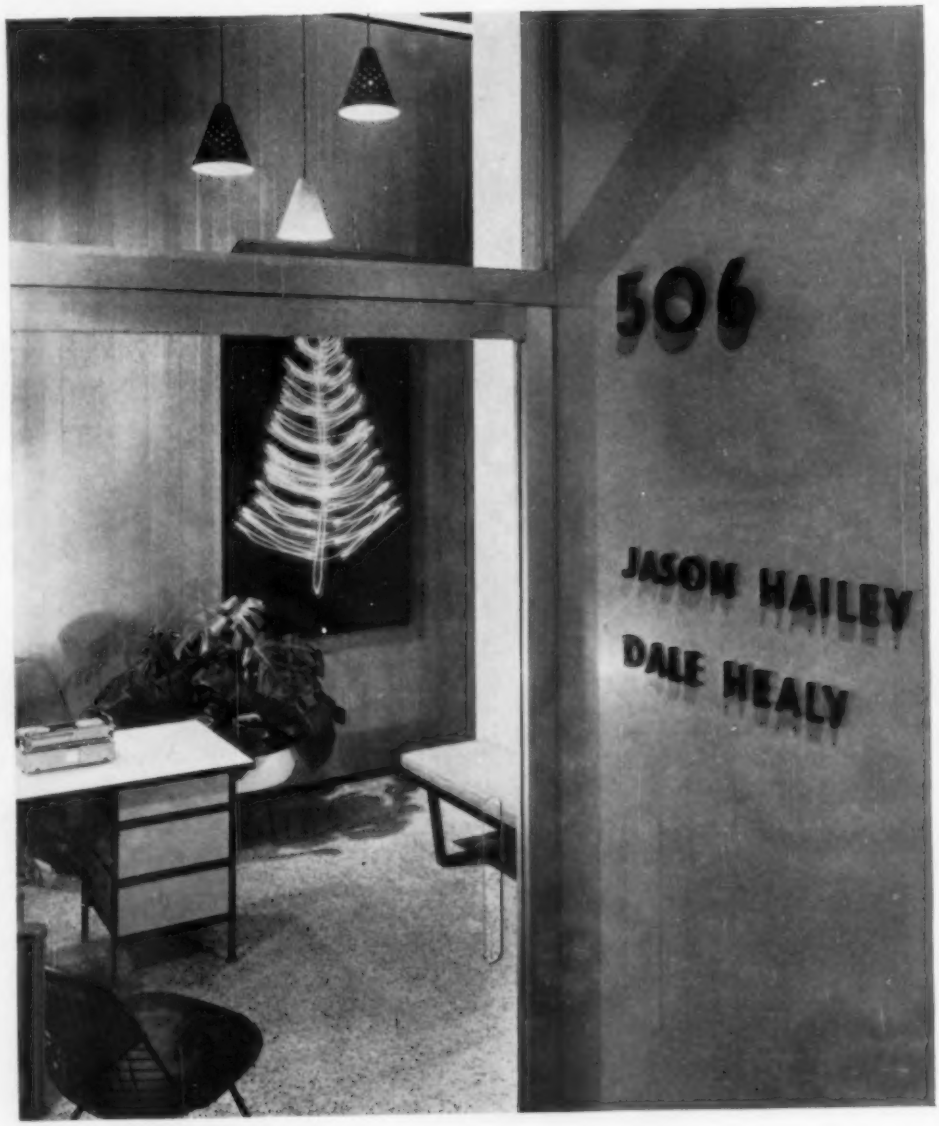
Other Flooring: asphalt tile/ white base, black and white spatter/ Mastic Tile Corp. of America, 2340 E. Artesia, Long Beach, Calif.

accessories

Bath Accessories: Hall-Mack Co., 1380 W. Washington Blvd., Los Angeles, Calif.

Clock, Reception Room: The Howard Miller Clock Co., Zeeland, Mich.

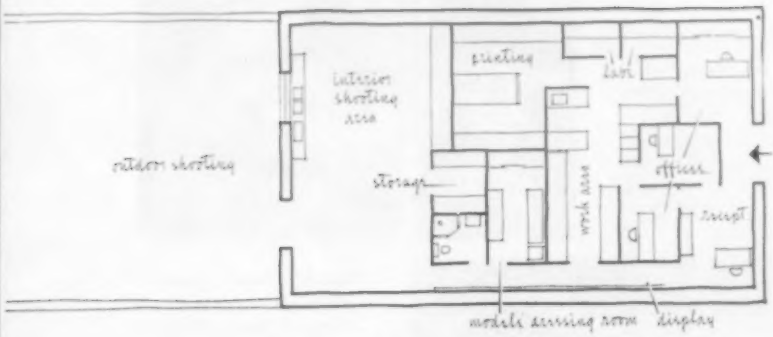
Metal Sign Letters: A. J. Bayer Co., P. O. Box 58283, Vernon Branch, Los Angeles 56, Calif.



client | Hailey-Healy Studio

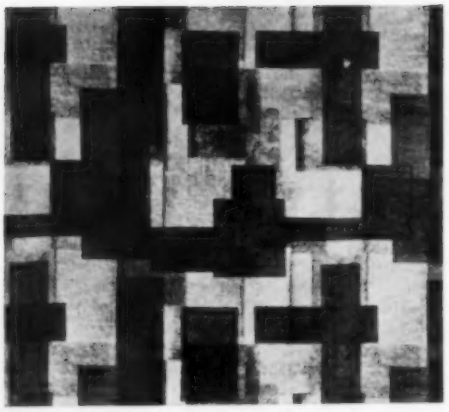
location | Los Angeles, California

architects | Craig Elwood Associates

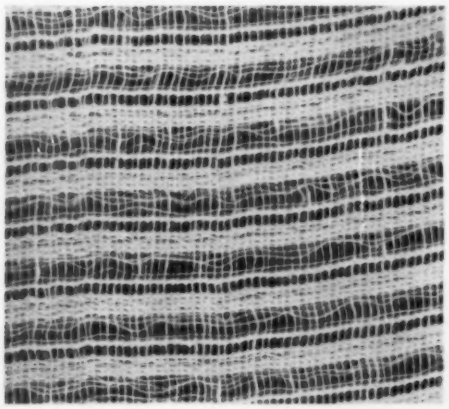


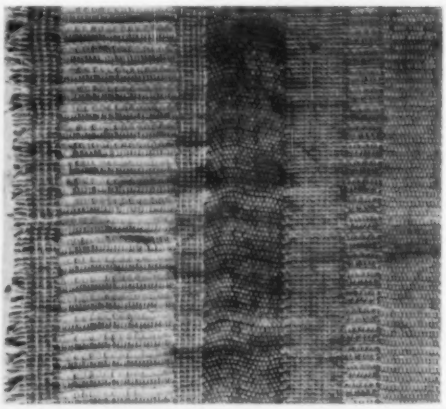
Assembly-line efficiency for a photographic studio's complex of processes dictated interior area planning in the conversion of a 37-year-old building, 35'x60'. Deliberately unobtrusive color plan uses only white, black, gray, and natural woods. Surfaces in "wet" areas are judiciously finished in such moisture-protective materials as painted marine plywood, Fiberglas reinforced-plastic coating, and Formica. Perforated sheet-metal panel displays unframed prints, gum-label-attached to facilitate frequent changes.

Photos: Hailey-Healy Studio



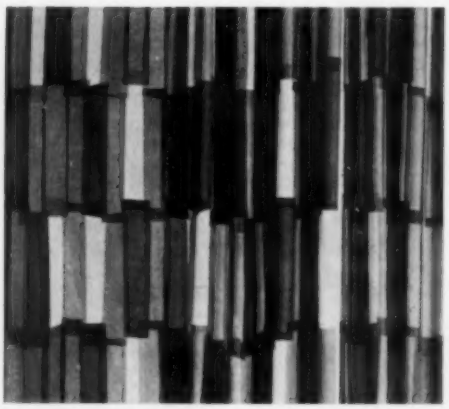
"Orpheus" (below left): linen and viscose casement fabric in open woven construction/ 52" wide, all-white/ **retail:** $5.40 yd
"Olympia" (below right): linen, goathair, and Egyptian cotton/ 52" wide, off-whites/ **retail:** $18 yd/ **Jack Lenor Larsen, Inc., 16 E. 55 St., New York, N. Y.**

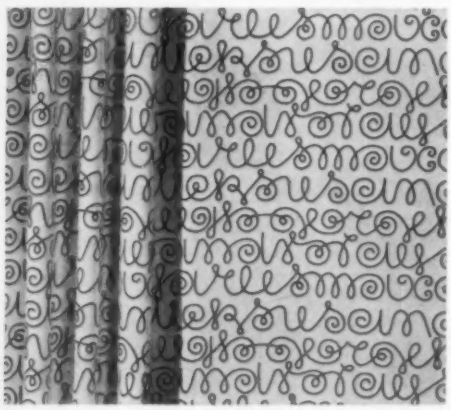


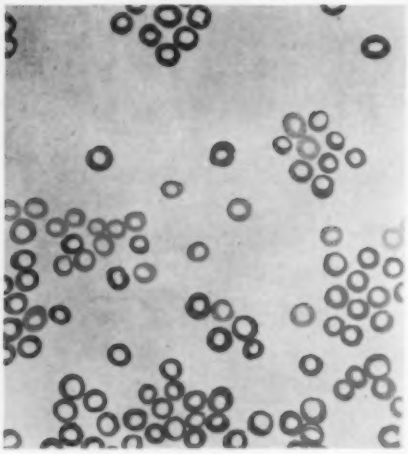


"Shadow Plaid" (above): hand-painted on fabric or wallpaper/ Slate and brown on gray, gold and walnut on Lemon, Emerald and Teal en Aqua, Persimmon and red on coral/ 48" rayon and cotton antique satin/ **retail:** $9.50 yd/ **Greeff Fabrics, Inc., 4 E. 53 St., New York, N. Y.;** wallpaper/ **retail:** $4.75, single roll/ **Katzenbach & Warren, 575 Madison Ave., New York, N. Y.**

"Ribbons" (right): crimson, yellow, turquoise, ultramarine, gray on white linen/ **retail:** $6.50 yd; umber, crimson, magenta, ultramarine, sepia on poplin/ **retail:** $8.40 yd; magenta, Emerald, orange, turquoise, brown on batiste/ **retail:** $6.45 yd; violet, Emerald, yellow, orange, gray on silk organdy/ **retail:** $8.85 yd.
"Names" (far right): on linen/ **retail:** $5.25 yd; on silk gauze/ **retail:** $7.80 yd; on cotton batiste/ **retail:** $5.40 yd/ designs by Alexander Girard/ **Herman Miller Furniture Co., Zeeland, Mich.**



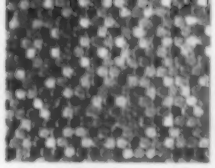




"Stacked Tiles" (far left): Emerald, olive, lime on cream linen/ **retail:** $9.75 yd; yellows, Mustard, gold on white linen/ **retail:** $9 yd; Charcoal, gold, blue on semi-sheer of goat-hair/ **retail:** $9 yd; white, off-white, silver on Champagne silk and Fortisan gauze/ **retail: $10.50 yd.**
"Scattered Beads" (left): on cotton taffeta/ **retail:** $10.50 yd; on gauze/ **retail:** $10.50 yd; on Belgian linen/ **retail:** $10.50 yd/ designs by Gere Kavanaugh/ **Isabel Scott Fabrics Corp., 515 Madison Ave., New York, N. Y.**

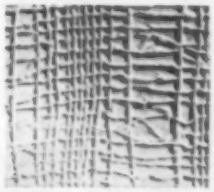
VICRTEX V.E.F. ORIGINALS

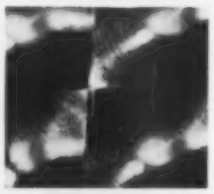
IMPERIAL



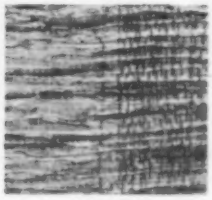
DAMASK
GRASS CLOTH

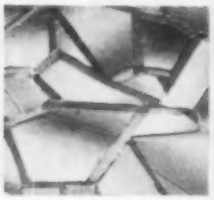
NATIVE NET



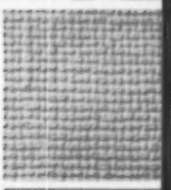

TRANSLUSION

new patterns? of course...


KAMAKURA



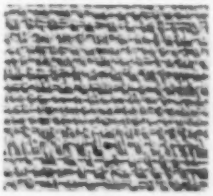
CATHEDRAL
CONTINENTAL

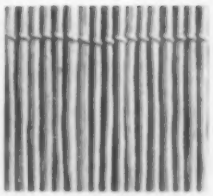


and don't forget these

VICRTEX V.E.F.* ORIGINALS

... they are **proven favorites**
... always available in all the
glorious V E F colors


MADAGASKA

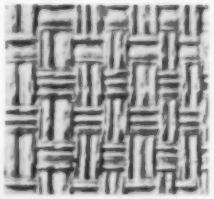


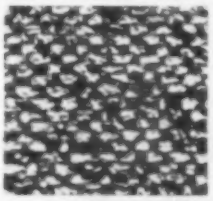
LINEN
BAMBU

New patterns or old favorites, you'll find Vicrtex VEF Originals on walls of "fame" from coast to coast, from north to south ... in impressive hotels and restaurants ... in the nation's schools and hospitals ... in homes and offices ... used, too, as upholstery for chairs, sofas, banquettes.

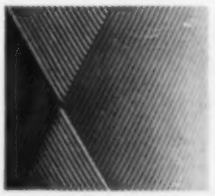
Wherever it is Vicrtex brings new life and color ... a deep luxurious textured appearance ... an intriguing dimensional look. Carpenter's exclusive processes impart an iridescent, luminous glow, an elegance, that mystify the eye and delight the senses.

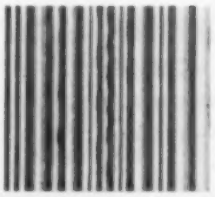
New pattern or old favorite, Vicrtex VEF vinyl fabrics open a vivid new world of decorating ideas ... set a new standard in economical maintenance and service.

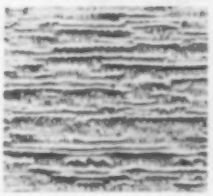

WOODWEAVE


BRIARTWEED

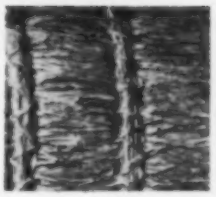
SHADO-STAR
WOODTEX

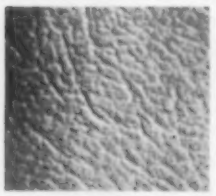




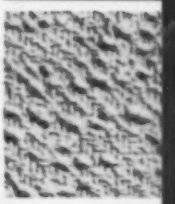


PALMETTO
VICRA LOOM


SAFARI

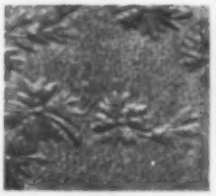


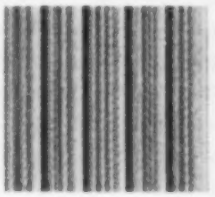
HANDLOOM
heavy duty
DADO-WALL

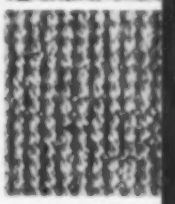


BOUCLE

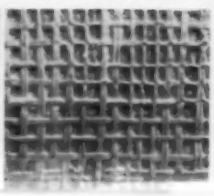
Write, wire, phone today for our "Walls of Fame" brochure, samples and prices.
LUZON

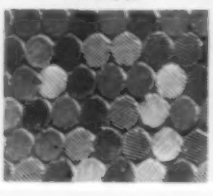

PRINCESS

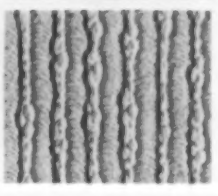

REGAL


BRUSSELS

L.E. CARPENTER & COMPANY, INC.
Empire State Building, New York 1, N.Y. LOgacre 4-0080
Mills: Wharton, N.J.


MIRRA DISC


ALGERIA


CORONATION

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... **Optical grade clarity** in transparent form. ... **Colorful**—select from a rainbow of bright or subdued hues.

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Canadian Distributor: *Crystal Glass & Plastics, Ltd., 130 Queen's Quay East, Toronto, Ontario, Canada*

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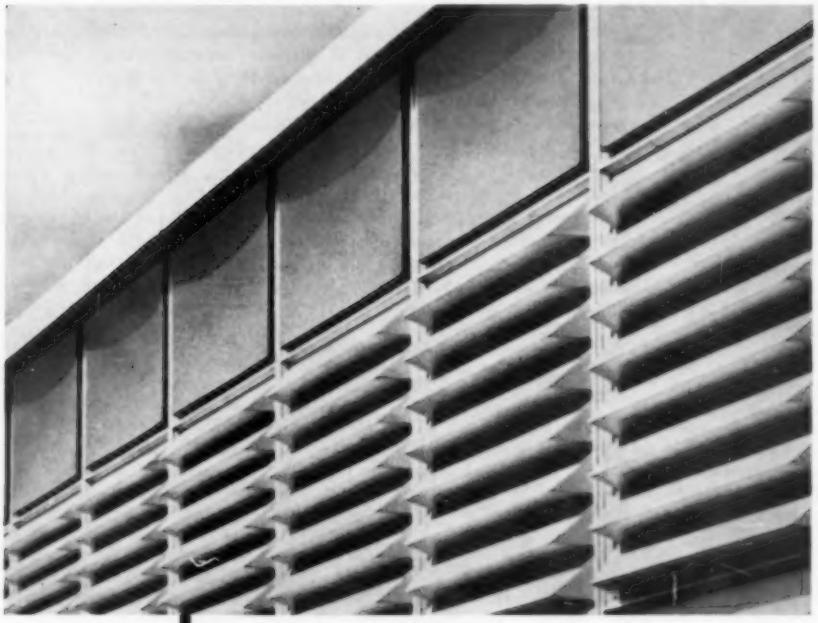
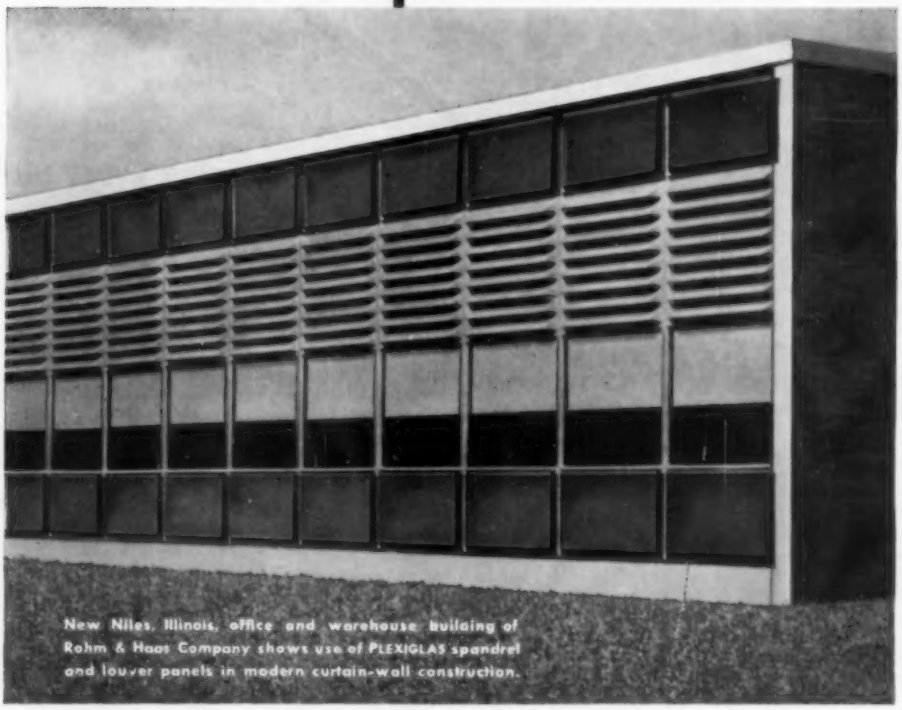
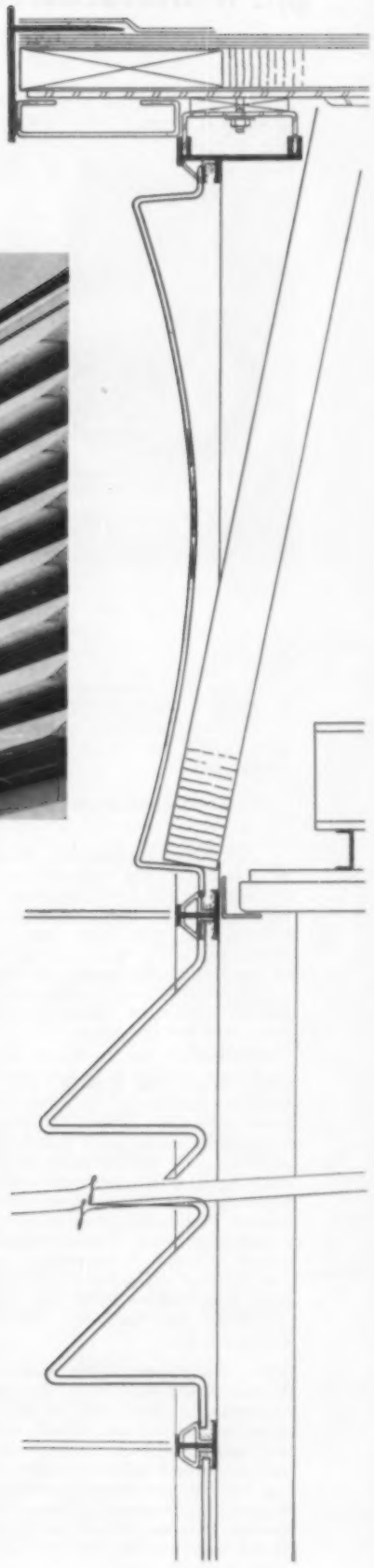
Spandrel Panels formed from PLEXIGLAS provide functional beauty . . . lightweight . . . economy and low maintenance advantages.

Daylight Louver Panels . . . light transmission, daylight control and weather closure in a single formed sheet of PLEXIGLAS.





New Niles, Illinois, office and warehouse building of Rohm & Haas Company shows use of PLEXIGLAS spandrel and louver panels in modern curtain-wall construction.



Offering the first complete data and information about plywood diaphragms, The Douglas Fir Plywood Association has recently released a booklet, Basic Facts About Fir Plywood Diaphragms. *Of interest to architects, engineers, builders, the publication—which represents several years' research—presents facts about the use of this relatively new design method.*

Some advanages of fir plywood for diaphragm construction are its shear strength, large panel size, shock resistance, light weight, and appearance. Material is said to offer easy way to precisely engineer structures of all sizes and designs to withstand lateral loads caused by windstorm or earthquake.

Importance of diaphragms and description of how a diaphragm works are featured. Tables show relative performance of plywood and other materials to deflection under shear stress. Design data is illustrated by tables and construction details. Cost, building code acceptance, and specifications are included, as well as photos of existing examples of application.

Copies of Basic Facts About Fir Plywood Diaphragms *may be obtained by writing directly to: The Douglas Fir Plywood Association, 1119 A St., Tacoma 2, Wash.* E.C.D.

★ *Editor's Note: Items starred are particularly noteworthy, due to immediate and widespread interest in their contents, to the conciseness and clarity with which information is presented, to announcement of a new, important product, or to some other factor which makes them especially valuable.*

air and temperature control

★ **129. Air Engineering Data File,** AIA 30-D-1, 24-p. bulletin discusses engineering and testing facilities for propeller fans. Specifications, construction, maintenance, installation are covered. Charts and tables show how to estimate air-handling requirements, including duct resistance, elbow losses, weather cap losses. Special application equipment specifications included. Aerovent Fan Co., Inc., Piqua 64, Ohio.

130. Roto-Clone Type W, 16-p. catalog features operation of the rotary dust collector in detail. Collector has addition of water spray which plays continuous flow of water on collecting surfaces, lowering water requirement of conventional dynamic precipitators. Various arrangements diagramed. Performance characteristics tables, engineering data, humidifying-efficiency graphs included. A one-package unit, except for duct connections. Available in 12 sizes from 1000 to 50,000 cfm. American Air Filter Co., Inc., 215 Central Ave., Louisville, Ky.

131. Fitzgibbons 7700 Series Boiler-Burner Unit, AIA 30-C-1, 4-p. brochure concerning oil-fired unit for forced hot-water heating systems. Suitable for homes and small buildings. Features easily installed enclosed jacket extension, low-voltage controls, new shipping package. Specifications and necessary equipment included in data. Diagram illustrations. Fitzgibbons Boiler Company, Inc., 101 Park Ave., New York 17, N. Y.

132. Trade-Wind Ventilators and Heaters, 12-p. catalog exhibiting line of kitchen/bathroom ventilators and electric wall heaters. Introduces prewired built-in oven ventilator—equipped with on/off switch, automatic thermostat, and removable filter. Also features packaged ventilator hood systems—formerly sold in bulk only—now available for single installations. Photos, drawings, sizes, installation data. Trade-Wind Motorfans, Inc., 7755 Paramount Blvd., Rivera, Calif.

133. Hernel-Cool II Ventilator, 24-p. booklet containing data on year-round air-conditioning and ventilating system designed especially for classrooms. Outlines construction features. Details operating characteristics and controls. Procedure for selection, selection data, selection example; hot- and chilled-water cooling capacity charts; specifications; dimensioned drawings; installation drawings; data on accessories; book shelves; utility cabinets, wall fillers; engineering data; photos. Herman Nelson, American Air Filter Co., Inc., Louisville, Ky.

construction

236. Calking—Pointing, Filling and Sealing. AIA 7-D, 4-p. booklet describing new synthetic-rubber calking and sealing compound. Called Sonolastic, compound consists of sulfurized, synthetic-rubber polymers, plus an activator which makes the liquid a rubberlike substance. Product is nonshrinkable and impervious to weather. Recommendations state where and how to use compound; complete instructions for application; specification data. L. Sonneborn Sons, Inc., 404 Fourth Ave., New York 16, N. Y.

★ **237. Ideas for Industry.** 33-p. brochure summarizing recent research and development with stone, metal, and wood—for construction and industry—with special attention to poured gypsum-concrete roof decks, precast-gypsum planks, preformed-sheet-steel roof decks, acoustical systems, insulation, and meshes of expanded metal. Photographs indicate variety of products and processes. United States Gypsum Co., 300 W. Adams St., Chicago 6, Ill.

238. Unistrut Partitions, AIA 35-H-6, 27-p.
239. Racks You Can Build With Unistrut, AIA 14-G, 23-p. Two catalogs describing easily erected metal partitions—for factories, offices, stores—and adjustable metal racks for a variety of applications. Partitions have a number of framing patterns; are movable, durable, and reusable. Any paneling material may be used. Typical units are illustrated with photos and diagrams. Easily assembled racks require no welding; can be reused, providing excellent temporary or permanent storage space. Basic fittings are shown. Types of installations shown by photos. Design data and specifications included. Unistrut Products Co., 933 W. Washington Blvd., Chicago 7, Ill.

240. Complete Inspection & Testing Service for Soil, Concrete, Metal, 4-p. brochure describing types of services available. Photos illustrate various testing methods. West Penn Testing Laboratories, Inc., 482-486 W. Eighth Ave., West Homestead, Pa.

Bibliography of Information About Aluminum for the Designer. Selected Bibliography from the library of Aluminum Company of America lists literature and motion pictures available to designers and design engineers in the metal-working industry. Write direct: Room 799, Alcoa Bldg., Mellon Sq., Pittsburgh 19, Pa.

241. C-B-R-III, 12-p. illustrated bulletin published by S. A. Cimeteries & Briqueteries Reunies, Brussels, Belgium, present-

ing detailed information, test reports, strength diagrams, engineering data on a new Belgian high-early strength portland cement. Cement complies with ASTM C 150-1955 specifications, sets normally, hardens rapidly. Strength due to fine grind of special type of clinker. Cement is stable: meets Le Chatelier test and ASTM autoclave test; low alkali content. Indussa Corporation, 511 Fifth Ave., New York 17, N. Y.

242. Masonry Wall Reinforcement, ★ AIA-10C, 20-p. folder containing reports of independent study on masonry wall reinforcement conducted by Edwin L. Saxer, Chairman, Engineering Dept., University of Toledo. Purpose of study was to obtain information on behavior of horizontal joint reinforcing in concrete masonry construction. Results include reports on effectiveness of deformation of steel side rods, design comparison, mortars, distribution of wall stresses. Flexural tests illustrated by diagram. Suggested specifications given. Dur-O-wal, P. O. Box 89, Cedar Rapids 29, Iowa.

243. Davidson Architectural Porcelain, AIA-17-A, 20-p. reference catalog with data on porcelain-enamel panels for commercial and institutional buildings. Section on curtain walls provides details and elevations showing installation of single and double-wall panels via mechanical connections. Section on facing panels shows clip attachment for screw connections and gasket-type joints. Gives typical trim and opening details. Illustrates variety of panel surface patterns and channel letter designs. Photos and drawings show: installation of decorative facing panels and louver inserts; exterior remodeling job; installation of checkered-panel pylon. Davidson Enamel Products, Inc., 1104 E. Kibby St., Lima, Ohio.

244. Metal Curtain Wall CWA-2, AIA 17A, 4-p. folder features system in which snap-in stops form profiles of framing members. Profiles easily changed by varying stops. Characteristics of framing, panels, erection, and glass-type listed. System available in extruded aluminum. Full-scale detail drawings of various components of prefab curtain wall enclosed. Specifications. Michaels Art Bronze Co., P. O. Box 668, Covington, Ky.

245. Suggestions For The Installation and Care of Northern Hardwood Flooring, 8-p. booklet gives suggestions for laying hardwood floors to reduce moisture problems. Factors include laying floor last, allowing for expansion, damp-season ventilation, heat under flooring. Precautions to be taken on the job site also discussed. Maple Flooring Manufacturers Association, 35 E. Wacker Dr., Chicago 1, Ill.

246. Architects' Sketch Book of Lennox Comfort Curtain Applications, 8-p. brochure illustrating use of heating and ventilating system in school design. Easily adapted to various plans. Sketches and drawings of several installations. Booklet stresses possibilities of application. Lennox Industries, Inc., 1701 East Euclid St., Box 1356, Des Moines, Iowa.

247. Southern Pine Architect's Bulletin No. 1, AIA 19-A-1, 16-p. catalog containing information and technical data on Southern Pine lumber. Recommended grades for all types of construction are listed. Dimensions—nominal and dressed—for all items, description of grades available, and table of working stresses featured. Suggested preservatives included. Southern Pine Association, P. O. Box 1170, New Orleans 4, La.

248. Panel Engineering Data Book, ★ 105-p. illustrated booklet describing uses of new structural material said to exceed other materials in strength-weight ratio, particularly in sandwich-panel construction. Characteristics of Panelfab construction include design versatility, lightweight, strength, insulating properties, thin flush-wall construction with interlock providing 100% joint efficiency, minimum maintenance. Large variety of finishes available. Uses include panel walls, curtain walls, solar façades, doors, interiors. Engineering data given for thermal characteristics, electrical and mechanical installations, acoustic properties. Complete discussion of structural design and analytical forms. Selection of materials outlined. Details, charts, photos illustrate data. Panelfab Products, Inc., 2000 North East 146 St., North Miami, Fla.

electrial equipment, lighting

413. Spring City Electrical Boxes and Cabinets, 24-p. catalog announces availability of various electrical boxes, including cast metal junction and pull boxes, conduit boxes, hinged cabinets and explosion-proof housing. Many styles and sizes listed. Drawings of types, recommended conduit locations, mounting lug data included. Spring City Electrical Manufacturing Co., Spring City 14, Pa.

Valance, Cornice and Cove Lighting, 8-p. booklet gives general rules for structural design and installation of valance, cornice, and cove faceboards. Materials for faceboards, construction detail sketches, dimensions for location of wiring channel and light source included. Lighting effects obtainable using each of these types are discussed. Dimming equipment reviewed. Photos of installations illustrate principles. Copies available at $.10 per copy. Write direct to: Westinghouse Lamp Division, P. O. Box 388, Bloomfield, N. J.

414. Architectural Floodlighting, 8-p.
415. Modern Outdoor Lighting, 12-p. Two bulletins dealing with exterior lighting applications illustrate numerous examples. Dramatic effects of highlighting building forms and surfaces are shown in first booklet, which provides suggestions for selection and location of floodlights; recommends footcandle levels for particular surface materials. Second bulletin serves as guide for planning attractive lighting installations in parking areas around shopping centers or suburban businesses. Discusses costs, requirements, appearance. Shows luminaire designs and accessories. General Electric, Schenectady 5, N. Y.

416. Electric Generating Plants, 38-p. book of general information concerning selection of engine-driven electric generating plants. Three general groups of plants—alternating current, direct current, and battery charging—and operation of each is described. Prime movers for driving generator—gasoline, diesel, and gas engines—are discussed, with cost of operation and installation included. D. W. Onan & Sons, Inc., 2600 University Ave., S. E., Minneapolis 14, Minn.

417. Philite Troffers, 4-p. bulletin illustrating complete line of troffers. Featured are hinged shielding and curved translucent side panels. Rapid start and slimline units available. Special series for schools, hospitals, factories, and display

(Continued on page 166)

PROGRESSIVE ARCHITECTURE, 430 Park Avenue, New York 22, N. Y. I should like a copy of each piece of Manufacturers' Literature circled. Coupon must be used by 12/1/57.

129	240	413	536
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131	242	415	885
132	243	416	886
133	244	417	887
236	245	418	888
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239	248	535	

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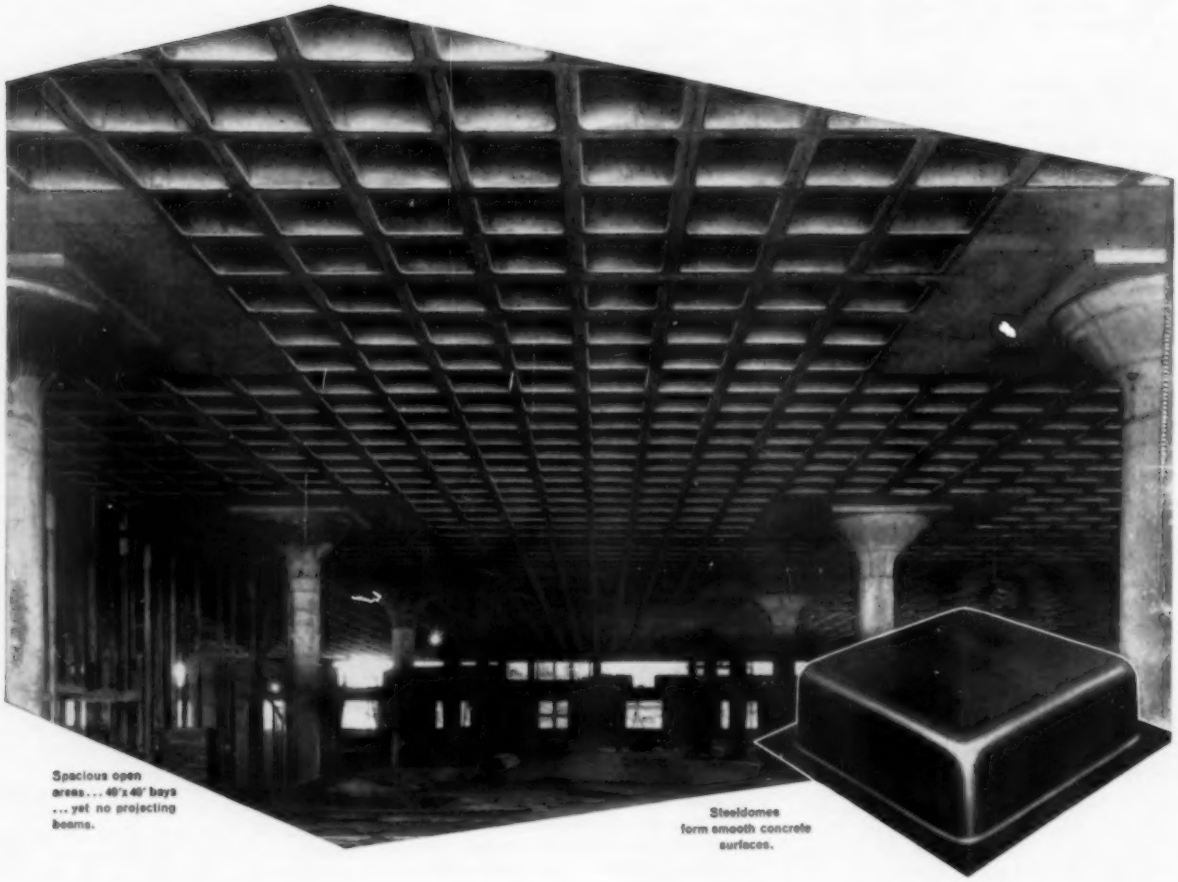
We request students to send their inquiries directly to the manufacturers.

EXPANSIVE?—YES EXPENSIVE?—NO



CECO STEELDOME CONSTRUCTION

Wide 40′ x 40′ bays can be built with savings up to 30%

How to get wide open space in buildings and yet meet a budget is a problem faced by architects and structural engineers. This is difficult to achieve—but there is a solution—two-way slab construction formed with Ceco's new one-piece Steeldomes.

Employing this method, 40′ x 40′ bays supporting 150 lb./sq. ft. live load were built economically through the teamwork of Friedman, Alschuler & Sincere, architects-engineers, and contractor Wm. E. Schweitzer in constructing the plant and warehouse for Crescent Industries, Inc., Niles, Ill. A pilot study showed Ceco Steeldome construction was the most economical of all. Savings up to 30% were indicated.

Dome construction is essentially flat slab design with voids. The voids reduce deadload—the joists provide rigidity. Erection is fast and economical, on simple one-way open wood centering. With Steeldomes, the exposed waffle pattern presents a high-quality finish. Added to that, you get the advantages of wide open space and lower cost. On the Crescent project Ceco also supplied reinforcing steel and hollow-metal doors and frames. Ceco Steel Products Corporation. Sales offices, warehouse and fabricating plants in principal cities. General Offices: 5601 West 26th Street, Chicago 50, Illinois.

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IN CONSTRUCTION PRODUCTS CECO ENGINEERING MAKES THE BIG DIFFERENCE

Steelforms / Concrete Reinforcing / Windows, Screens / Hollow-Metal Doors / Metal Lath / Steel Joists / Roofing Products

This is KENTILE® vinyl asbestos tile

So much easier to care for!
So much longer-wearing!
And grease-proof, too!

KENTILE FLOORS

available in Vinyl Asbestos, Solid Vinyl, Cushion-back Vinyl, Rubber, Cork and Asphalt tile...over 150 decorator colors.

SPECIFICATIONS

SIZES AND THICKNESSES:		
Marbleized	9"x9"	1/16", 1/8"
Carnival	9"x9"	1/16"
Corktone	9"x9"	1/16", 1/8"

COLORS:	
Marbleized	19
Carnival	16
Corktone	3

INSTALLATION
Kentile vinyl asbestos tile (KenFlex®) may be installed over any smooth interior surface, including concrete in contact with the earth.

(Continued from page 163)

lighting. Selector guide included. Ruby-Philite Corp., 30-02 Queens Blvd., Long Island City, N. Y.

418. Mainliner Luminaires, 12-p. guide to large area lighting. Features recessed and surface types in a variety of widths, lengths, and shielding styles—including plastic diffusers, lenses, and louvers; glass lenses; or steel louvers. Shallowness of units aid installation in difficult areas. Luminaires may be combined with any type of square ceiling material and offer many pattern variations. Westinghouse Lighting Division, MacArthur Ave., Bloomfield, N. J.

finishers and protectors

533. Materials for Construction and Maintenance, 20-p. product guide describing properties and advantages of compounds for joining, protecting, strengthening, and repairing construction materials. Products include: brickwork calking, masonry dampproofing, latex expansion joints, water-repellent concrete admixtures, as well as pigment powder for integrally colored abrasion-resistant concrete floors. Specifications, application instructions, drawings, photos. A. C. Horn Company, 10 St. and 44 Ave., Long Island City 1, N. Y.

534. Del Synthetic Rubber Compound, 8-p. brochure stresses versatility and effectiveness of sealer. A paste compound, material is easily applied to any surface; sets quickly, providing permanent, weather-tight seal. Typical uses listed. Various formulations described, including directions for application. Photos of installations, drawings of window details and typical joints featured. Other tapes and compounds mentioned. David E. Long Corp., 220 E. 42 St., New York 17, N. Y.

535. "City of Tomorrow" Protected Today, 4-p. booklet discussing application of Presstite No. 1175.1 sealing compound in Dallas Exchange Park, Dallas, Texas. A Thiokol LP-base sealing compound, Presstite is recommended for setting glass and panels, sealing metal joints, metal windows to masonry walls, and sealing concrete, tile and masonry expansion joints. Brochure gives detail photos and diagrams of particular applications in Dallas. Characteristics, application method and suggested specifications are included. Presstite-Keystone Engineering Products Co., 39 & Chouteau Aves., St. Louis 10, Mo.

536. Glasfab, 8-p. catalog brochure describing properties of woven glass-fiber permanent membrane-waterproofing system. Compares volume, strength, weight, and thickness of product with other membranes. Provides specifications and cut-away drawings for hot process application using asphalt or pitch and cold process method using emulsified or cut-back asphalt. Expansion joint details, on-the-job photos. Twinsburg-Miller Corp., P.O. Box 207, Twinsburg, Ohio.

sanitation, water supply, plumbing

The Corrosion of Iron in Water, 8-p. technical paper discusses the electrochemical process and describes how to inhibit corrosion in hot water and other metal tanks. Closed and open systems, cathodic protection, bi-metallic corrosion, and new materials are reviewed. Tables and illustrations. Tank capacity table is featured. Write direct: How E. Baker Co., 4248 Whiteside St., Los Angeles 63, Calif.

Ballast Sound-Rating Calculator, 4-p. chart-folder with dial indicator attached will aid specifiers in determining sound level of fluorescent-lighting layout prior to installation. Using sound level stamped on case of ballasts, number of ballasts installed, size and acoustical characteristics of room, and room's ambient sound level, specifier can predict whether or not sound problem will result and select proper rating accordingly. Room constant chart, calculator instructions, ambient sound level guide included. Send request directly to: General Electric Co., Section 1662, Schenectady 5, N. Y. $1

(Continued on page 173)

NEW *Streamlined* STYLING

MODERN in design

MODERN in color

TAYLORed for you

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These newly designed face-mounted models and semi-recessed types now make the Halsey Taylor line most complete! This re-styling adds a distinct touch of streamlined beauty to time-proved functional utility and supplements contemporary architectural planning. Write for catalog or see Sweet's.

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the unique glass facing that insulates as it beautifies!

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TEMPERED GLASS,
5/16" thick, is textured on the weathering side to subdue bright reflections.

National Rifle Association Building, Washington, D.C.
Architect: A. R. Clas, A.I.A., Washington, D.C.

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a business office...created with

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Muralex pattern (one of more than 20) used in partition and door. **Satinol**® treated for softer light diffusion.

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filters daylight to reduce glare and sun heat

For this field house or the factory (or wherever you need to provide large quantities of daylight *without glare*) AKLO Glass is the answer.

Much like the color of better quality sunglasses, blue-green AKLO Glass lets through the most desirable portion of the sun's rays—that part of the spectrum most restful to the eyes—blue, green and yellow. The resulting "filtered daylight" fulfills the fundamental requirements of good illumination. It makes seeing so much easier. And reduces eye fatigue.

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AKLO is available in Hammered, Finetex® and Skytex® patterns, wired; Hammered and Finetex, unwired. Frosted finish also available. For detailed information, use coupon.

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Savings with Celluflor...

Milcor Celluflor®
saved 6 months
on this job!

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BAYSHORE CONSTRUCTION CO.

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Engineers:
J. Y. Long Co.
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Edward Martin, partner in Bayshore Construction Co., Oakland, Calif., is sold on Celluflor. Here's what he writes:

"The use of Milcor Celluflor permitted all trades to work simultaneously instead of one trade following another. We saved over six months on the job schedule for the El Dorado Building in downtown Oakland and permitted occupancy of 40,000 sq. feet of office space for our major tenant, The Pacific Telephone Co., six months after ground breaking."

Construction time savings are *dollar* savings — in overhead, financing and insurance. Earlier occupancy means *faster investment returns.*

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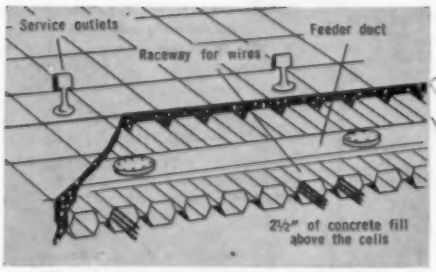
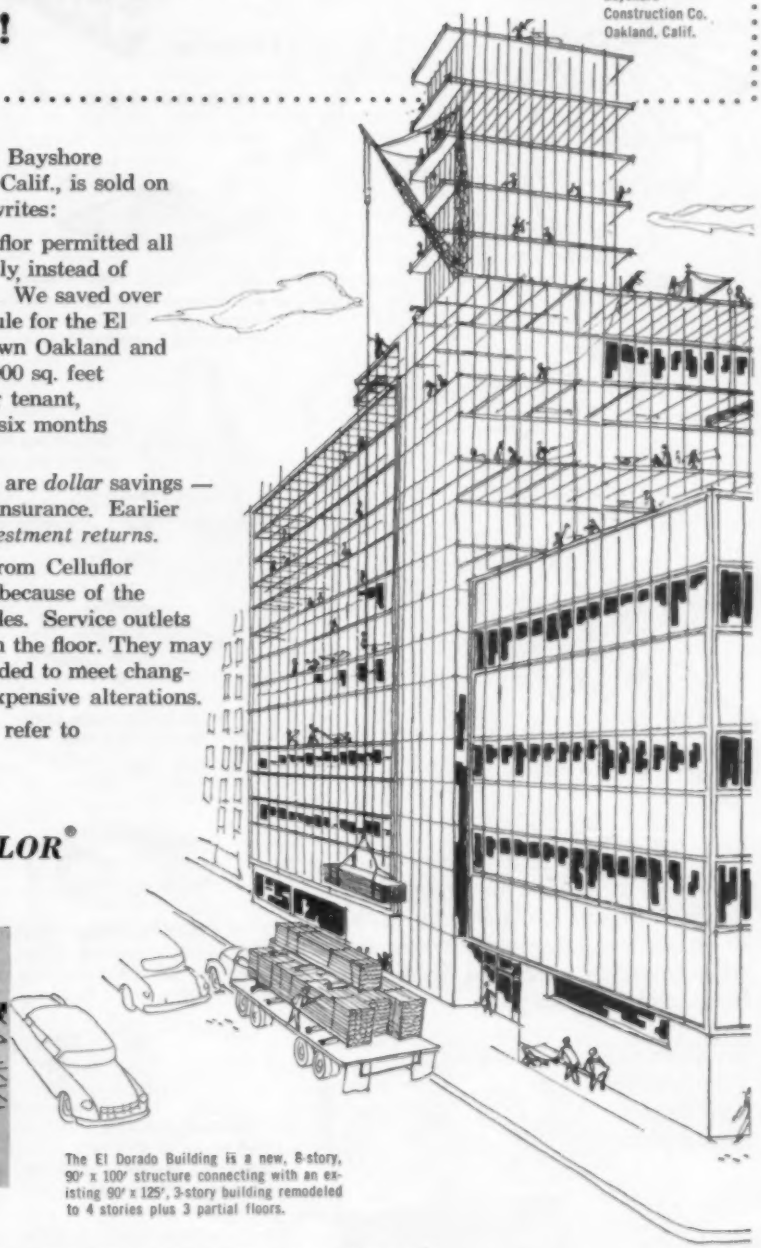
Write for Catalog 270, or refer to Sweet's — Section 2a/In.

MILCOR CELLUFLOR®





The El Dorado Building is a new, 8-story, 90' x 100' structure connecting with an existing 90' x 125', 3-story building remodeled to 4 stories plus 3 partial floors.

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SQUARE RECESS UNITS
with Holophane and Corning lenses for Intensive, Diffusing, Concave, Convex, Focusing and Asymmetrical distributions.

SILVER BOWL DIFFUSING fixtures in 4′ x 4′ and 2′ x 4′ sizes with the amazing GRATELITE Louver Diffuser*.

ALZAK PIN-HOLE RECESS LIGHTS
For intense downlighting—100 watt to 1000 watt sizes in General Service and Silver Bowl lamp types.

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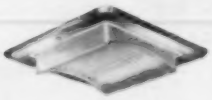
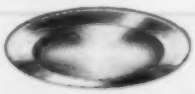
Both EYEBALL (shown) and CONCEALED rotator. Adjustable recess downlites for PAR and R-lamps.



CORRIDOR PRISMATIC RECESS FIXTURES
Three types for 2½:1 and 1:1 ratios.

LONG BOY ELLIPSE
Surface luminaire
(also available in recess units). Gives narrow, high intensity beam for indoor or outdoor mounting, or for accent lighting.



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Also available with Flat or Prismatic glass, and with metal concentric rings or open types.

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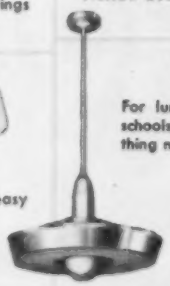
For directional markers, night lights, other minimum intensity installations. Narrow beam or drop-lens types.

ALZAK HINGED GLASS Drum Units
Hinges on concealed chain for easy relamping and cleaning.



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Pendant Type
For luminous indirect lighting in schools, stores and offices. Something new . . . and beautiful!

*GRATELITE Louver Diffuser® U. S. Pat. No. 2,745,001. Canadian Patented 1957, No. 538,245.

THE EDWIN F. GUTH COMPANY
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These and many, many more incandescent fixtures are included in this new Brascolite Catalog by Guth. A complete working tool, it contains all information needed to figure any incandescent lighting job.

Write on your letterhead for your complimentary copy.

Behold! My New Name:

SEEMORE

In response to my pleas for a name, many splendid suggestions were presented. After much thoughtful consideration, I have chosen the name "Seemore", submitted by

MR. WILLIAM J. MAGILL
Lighting Consultant
Southern California Edison Co.
P. O. Box 410
Long Beach 1, California

To Mr. Magill, and to the others listed below, whose suggestions were also deemed worthy of reward, I am dispatching a bottle of Metaxa—that most excellent Greek brandy. My warmest thanks to all of you who so kindly assisted in my quest for a name.

MR. A. E. BRUNER
Lighting Specialist
The Electric Supply Co.
128 Walton St., N.W.
Atlanta, Georgia

MR. R. S. SMITH
Consulting Engineer
3230 Ave. "J"
Fort Worth, Texas

MR. JACK PARSONS
Illuminating Engineer
Niagara Mohawk Power Corp.
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Guth brascolite
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p/a manufacturers' literature

(Continued from page 166)

specialized equipment

884. Methods for Plant Layout, 44-p. catalog showing materials and methods for making plant layouts or scale models without preliminary drafting. Describes two-dimensional system using grid sheets, templates, and tapes to create layout from which blueprints are made in usual manner. Drawings show available replicas of piping sections with brass-pin connections; pumps; compressors; ladders and stairs; laboratory furniture; refinery equipment and even scale figures for building miniature assembly lines and fully equipped model plants to facilitate visualization. F. Ward Harman Associates, Halesite, Long Island, N. Y.

885. Waste King Pulverator, 8-p. pamphlet discusses major features of Waste King commercial garbage disposers. Five basic models are illustrated and described. Cutaway drawing shows basic interior of pulverator. Operation and assembly features shown. Sizes for various applications illustrated. Waste King Corp., 3300 E. 50 St., Los Angeles 58, Calif.

886. Whirlpool Built-in Gas Range, AIA 35-C-11, 6-p.

887. Whirlpool Built-in Electric Range, AIA 35-C-11, 6-p. Two brochures illustrating features of gas and electric ranges. Gas range has heat surface units in cluster or 2-burner arrangements. Air-venting system keeps cabinet walls cool. Electric range features 7-heat surface units, radiant-heat broiler, control panel. Stainless-steel finishes for both types. All units installed at stand-up level. Specification data included, as well as diagrams. Whirlpool-Seeger Corp., St. Joseph, Mich.

★ **888. Time Saving Tips for the Draftsman and Engineer,** 40-p. booklet contains 59 shortcuts to speed drafting and computation work. Compiled from suggestions of engineers and draftsmen, these tips cover drafting shortcuts, engineering data ideas, board timesavers, and calculating methods. Most suggestions illustrated by diagram or drawing. New approaches to old problems featured. Frederick Post Company, 3650 N. Avondale Ave., Chicago 18, Ill.

surfacing materials

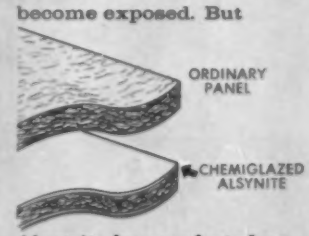
968. Micarta, AIA 35-C-12, 22-p. architects' reference manual on high-pressure laminated-plastic surfacing material for decorative applications in schools, restaurants, and offices. Technical data chart lists types, grades, characteristics, uses, and sizes. Describes fabrication process; supplies construction details for material applied to walls, window stools, countertops, sinks, doors, and partitions; photos show completed installations; sketches suggest further applications. Specifications, color and pattern chart. United States Plywood Corp., 55 W. 44 St., New York 36, N. Y.

A.I.A. FILE NO. 26-A-9

Let's take a new look at fiberglas panels . . .

There IS a difference!

Take surface for example. Ordinary translucent fiberglas panels are made with uncontrolled fiberglas mat. Strands run all the way to the surface. Under weathering conditions these strands become exposed. But



Alsynite has perfected an exclusive process—Chemiglaze—that compresses the mat into an extra-strong central blanket with full, controlled surface on both sides. Chemiglazed panels have at least 2 to 3 times the weathering resistance of non-Chemiglazed panels.
(ASTM Method of Test D822)

genuine Alsynite
THE ORIGINAL TRANSLUCENT FIBERGLAS PANEL

WRITE FOR SPECIFICATIONS—NO COST OR OBLIGATIONS

ALSYNITE CO. OF AMERICA
Dept. P-3., San Diego 9, Calif.

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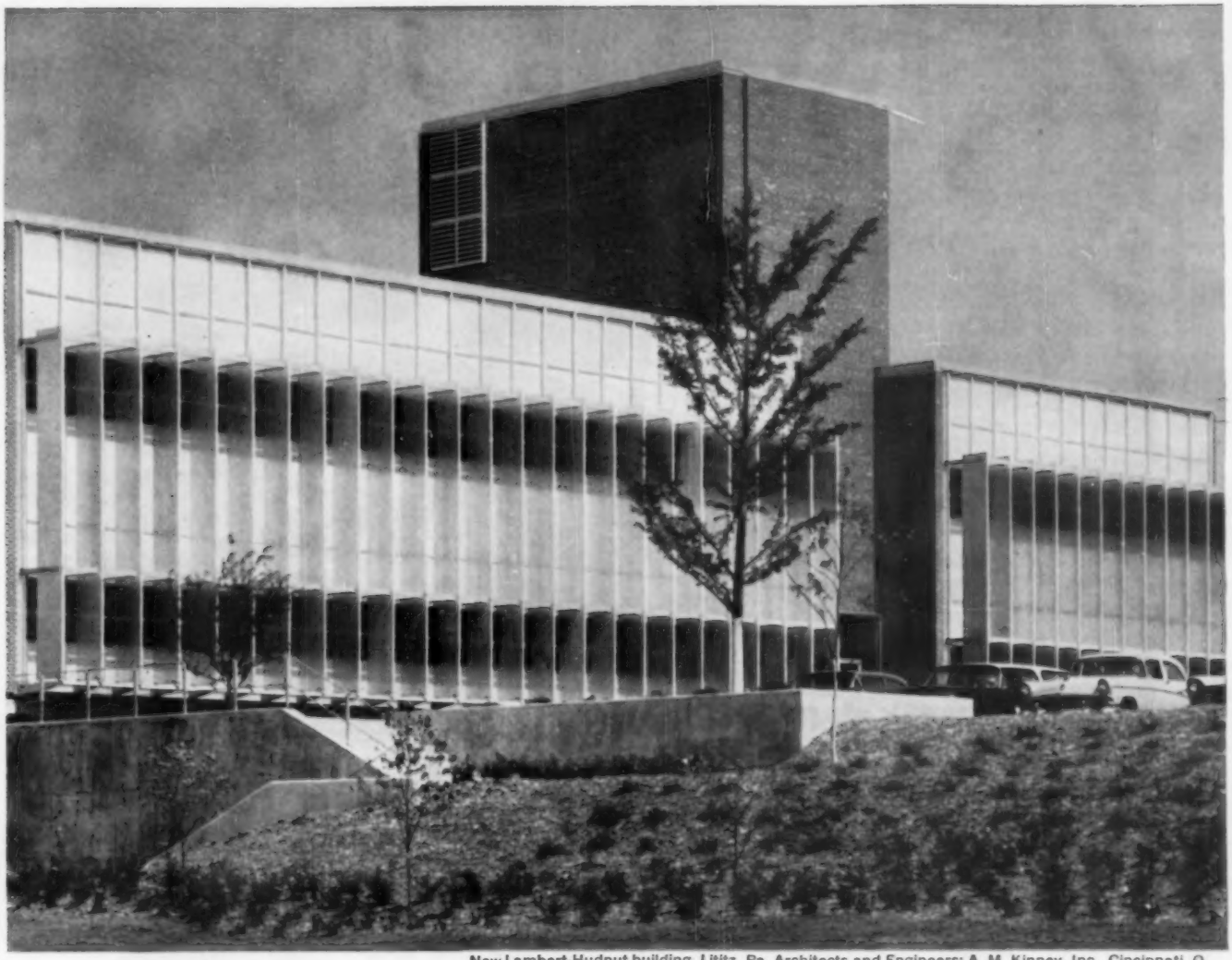
America's foremost plants* feature

New Lambert-Hudnut plant, one of the nation's "top ten", brightens the landscape with a LUPTON Curtain-Wall System

Voted one of this country's most efficient and beautiful new industrial installations, the Lambert-Hudnut building at Lititz, Pa., makes interesting and practical use of LUPTON Aluminum Curtain Walls and Windows.

The light green porcelain-enameled spandrels of this LUPTON curtain-wall system are visually pleasing, permanently clean and attractive, and in keeping with the impeccable atmosphere desired for a proprietary-cosmetic products manufacturing plant.

In combination with the wide curtain-wall areas and the masonry construction, the use of LUPTON Aluminum Projected Windows gives the final touch of modern functional beauty to this outstanding new building. On approaching



New Lambert-Hudnut building, Lititz, Pa. Architects and Engineers: A. M. Kinney, Inc., Cincinnati, O. Contractors: Robert E. Lamb, Inc., Philadelphia, Pa. Photographs by Courtlandt V. D. Hubbard.

LUPTON metal windows and curtain walls

the Lambert-Hudnut plant, one feels that an exterior of such striking design must shelter an efficient, well-run office and production operation.

The wide range of LUPTON curtain walls offers great freedom of design to the architect, low-cost installation and maintenance to the owner. And leaving the entire job to LUPTON—from manufacture to erection—often effects additional benefits. If you wish, skilled LUPTON crews can install custom or standard LUPTON aluminum curtain-wall systems—quickly, economically. LUPTON's undivided responsibility for the job assures exact compliance with your instructions.

Why not investigate the variety and economy of LUPTON Aluminum Windows and Curtain Walls? See the Michael Flynn catalogs in Sweet's (Sec. 3a and 17a), and speak with your nearest LUPTON representative (listed in the Yellow Pages under "Windows—Metal"). Or write or wire for more information.

LUPTON

ALUMINUM CURTAIN WALLS AND WINDOWS

MICHAEL FLYNN MANUFACTURING COMPANY
Main Office and Plant: 700 E. Godfrey Ave., Phila. 24, Pa.

*

Of the "top ten" plants of 1957—chosen by the Editors of Factory Management and Maintenance from nominations by leading architects and builders—three feature LUPTON curtain walls and windows: Lambert-Hudnut at Lititz, Pa.; Leeds & Northrup at North Wales, Pa.; and Owens-Corning Fiberglas at Barrington, N.J.

RICH'S Inc.
ATLANTA, GA. GEORGIA

February 9, 1956

Economy Engineering Company
4511 W. Lake Street
Chicago 23, Ill.

Re: Economy Engineering Company's window washing equipment for Rich's, Inc.

Gentlemen:

We, at Rich's, have always been very proud of our physical facilities and have made every effort to maintain them by proper scheduling and using the most efficient equipment.

As a result of the excellent service and money saved by the use of the window washing equipment that you furnished to us on our Store for Men installation in Atlanta, we again selected your fine equipment for the use on our new modern downtown shopping community in Knoxville, Tennessee.

This equipment not only has saved us maintenance cost, but has provided a safer means for maintaining these windows. It has enabled us to retain the crystal-like sparkle of the original design that would be impossible without the aid of this equipment.

We feel that a very conservative estimate of the savings resulting from these two pieces of equipment would be approximately $5,000.00 per year. Therefore, you can understand why we, once again, selected your equipment to accomplish this difficult task for us.

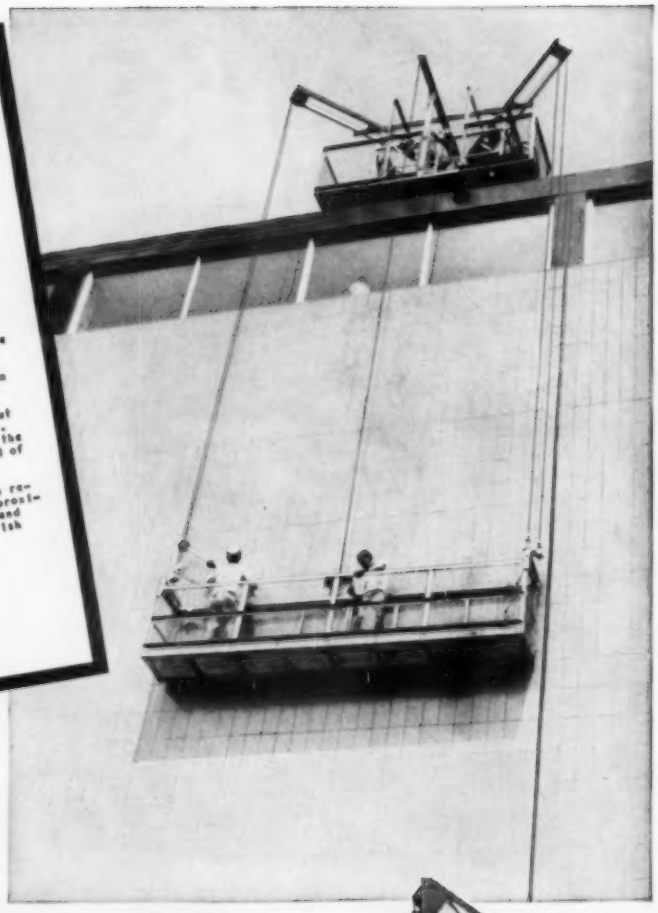
Very truly yours,

A. M. Forst

A. M. Forst
Supt. of Planning
& Plant Management

AMF:ks

Rich's Inc., one of the world's finest and most progressive department stores, was the first to recognize what the Wind-O-Washer offered in cost-saving and safety.



ECONOMY
Wind-O-Washer

A machine designed by Economy engineers for servicing buildings exteriors.

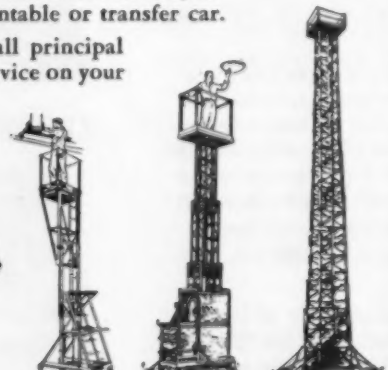
The architect can now exercise complete freedom in the design of building exteriors, unrestricted by the necessity of specifying movable glass for window washing.

The Wind-O-Washer is electrically operated from the working platform by push button controls for both up and down and horizontal movements. The machine travels on a track, and when not in use, is backed out of sight by means of a turntable or transfer car.

Economy representatives, located in all principal cities, can give personal engineering service on your problems and make recommendations with estimates. Each installation is individually engineered.

Write E. W. McDonnell for Catalog.

For interior maintenance. *Economy Hi-Reach Telescopers are the answer to the problem of servicing overhead lighting and hard-to-reach interior maintenance work. For many years these Hi-Reach Telescopers have been widely used throughout industry and by institutions.*



Model PUL 10'9" to 15' | Model LB 20' to 35' | Custom up to 100'

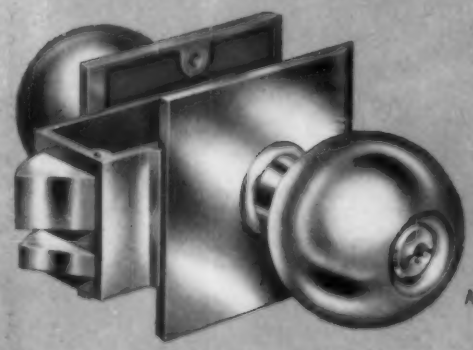
ECONOMY ENGINEERING CO.
4538 W. Lake St., Chicago 24, Ill.
New York Office: 342 Madison Ave., New York 17, New York

WHERE SILENCE IS LUXURY

DOORS THAT shut tightly with a click that's barely audible, resilient floors, sound-deadening walls and ceilings . . . each in its way contributes towards the elimination of distracting noises. Each reflects the functionalism of modern architecture. Russwin **Unilocs** equipped with Pullman-Type Latches require only the gentlest pressure to operate. They permit doors to be closed silently and securely.

This feature of **Unilocs** accounts in no small measure for their selection wherever the luxury of silence is as much in demand as the economy of quality.

Russell & Erwin Division, The American Hardware Corporation, New Britain, Conn.



A SYMPHONY IN LOCK MAKING

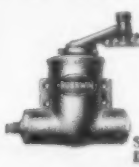
RUSSWIN®

"400" Closers

Stilemaker Locksets

Overhead Door Holders

"Ten Strike" Cylinder Locks



Surface Door Closers

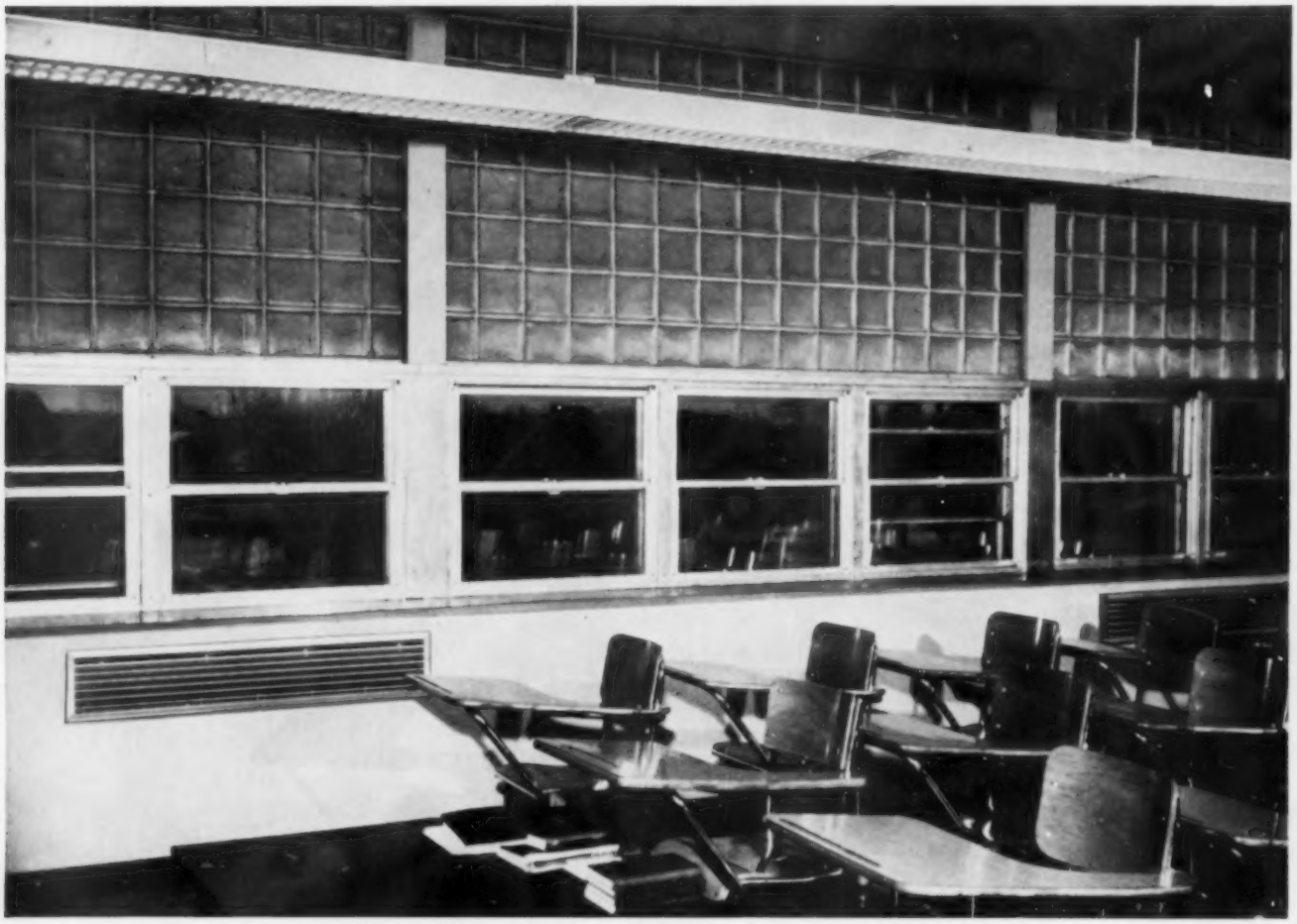
Fire Exit Bolts

How high velocity provides maximum comfort for schools

The *Anemostat All-Air High Velocity* system of draftless air distribution offers many important advantages for heating and ventilating schools. • High velocity units, used with smaller than conventional ducts, save space and money. They substantially reduce sheet metal required, can be installed faster, at less cost. Since there are no coils in All-Air HV units, clogging and odors are eliminated. • Anemostat *All-Air HV* operate entirely with air processed in the main equipment room; there is, therefore, no need to break through the walls of the building for prime air make-up. The Anemostat *All-Air HV* units eliminate fans, filters, and electric motors in the school rooms. Units are quiet, need a minimum of maintenance from custodians. • On these pages are typical installations in which the *Anemostat All-Air High Velocity* system has been used successfully. Application data on your specific school heating, ventilating or air conditioning problem is available from Anemostat representatives or from the home office.

Architects—attention please:

Anemostat round, square and straight line diffusers with high velocity units are adaptable to a wide variety of architectural designs.

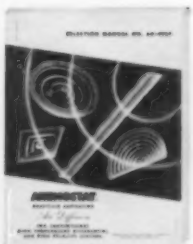


In this schoolroom Anemostat Type E Square Air Diffusers are installed in the ceiling.

Here Anemostat SLW Straightline Air Diffusers on the high sidewall provide draftless comfort.

Note the Anemostat UTW Straightline Air Diffuser located under the window in this classroom.

Anemostat UTW Straightline Air Diffusers are placed under the windows in this school laboratory.

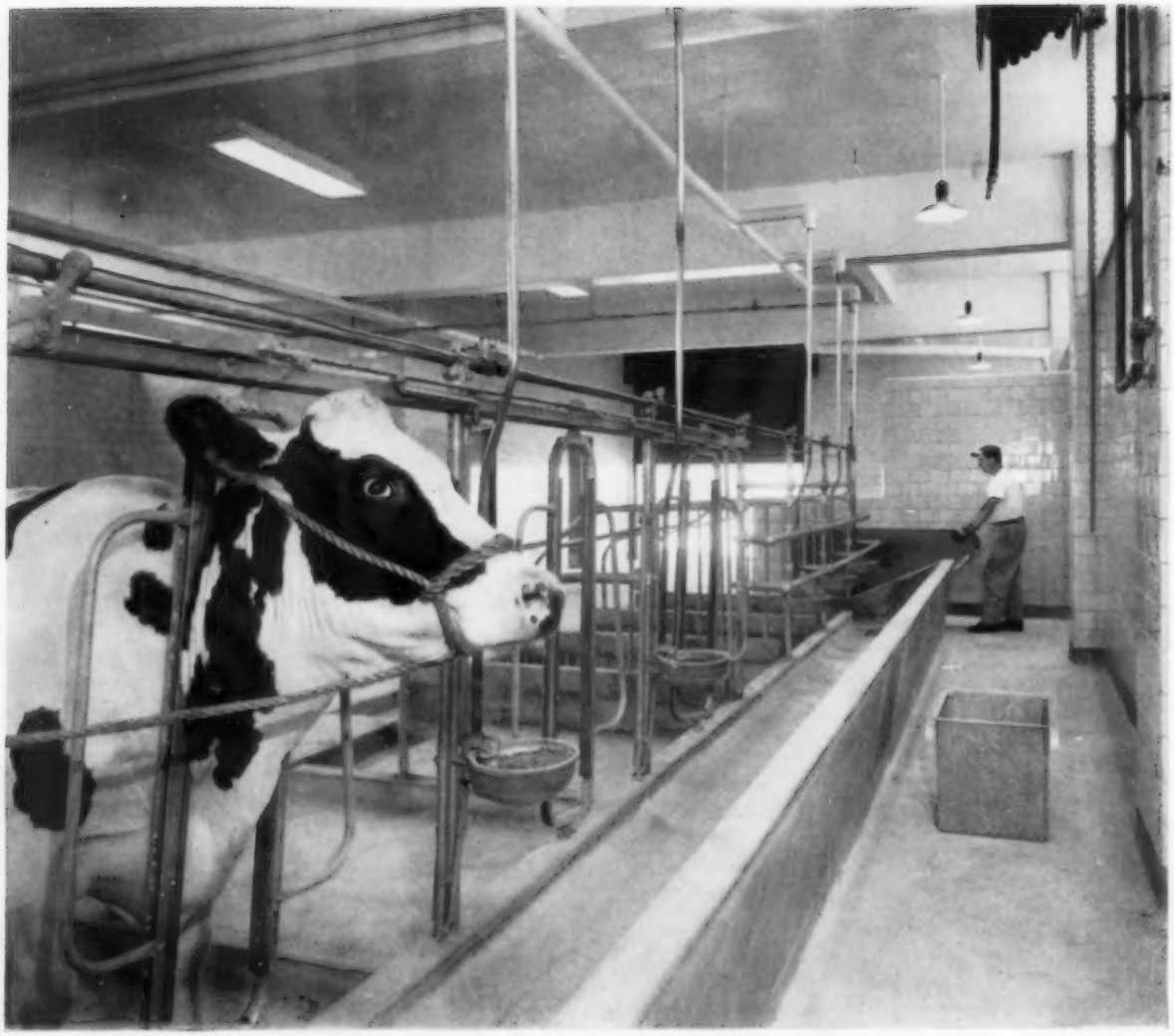


Write on your business letterhead for your copy of

New Anemostat Selection Manual 60

to Anemostat Corporation of America, 10 East 39th Street, New York 16, N. Y.

ANEMOSTAT: The Pioneer of All-Air High Velocity Systems



Styrofoam helps maintain even temperatures in new barns at Cornell veterinary school

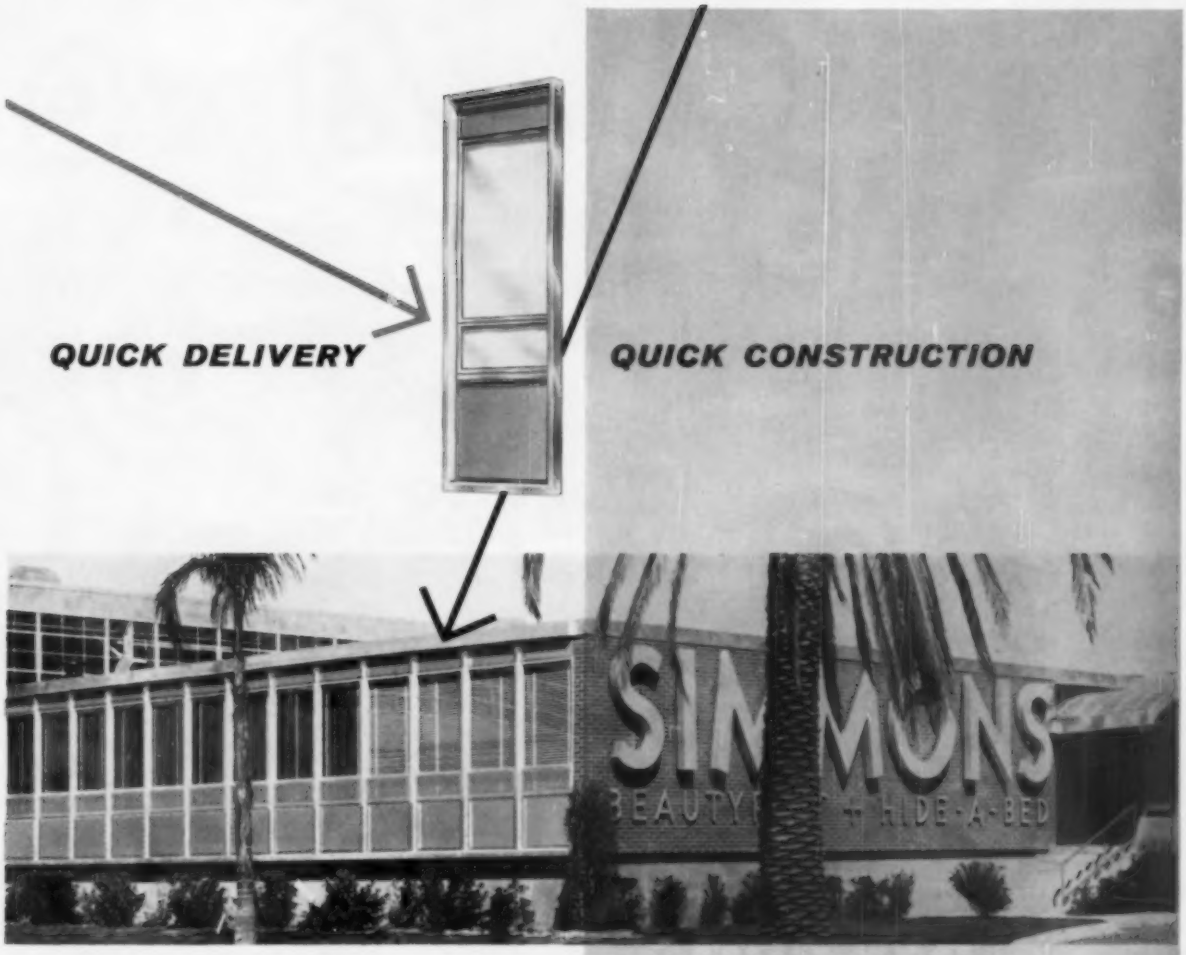
The New York State Veterinary College at Cornell University, Ithaca, New York, recently built ten new experimental barns. As cleanliness and temperature consistency were prime considerations, the construction materials selected were concrete block, structural tile and Styrofoam*, a Dow expanded polystyrene.

Styrofoam is the insulation of choice in many applications by many different companies—and for many good reasons. It has a constant low thermal conductivity and is resistant to the passage of water vapor. It has high structural strength, will not rot, mold or deteriorate. Styrofoam is lightweight and easy to handle. It can be cut with ordinary tools such as a saw or jackknife.

These facts add up to a low in-place cost and lifetime insulating efficiency. For more information, contact the nearest Styrofoam distributor, or write to THE DOW CHEMICAL COMPANY, Midland, Mich., Plastics Sales Dept. 1731N.

*Styrofoam is a registered trademark of The Dow Chemical Company.

YOU CAN DEPEND ON DOW



BROWN & GRIST WINDOW WALLS

Million dollar Simmons Plant put to bed in only seven months!

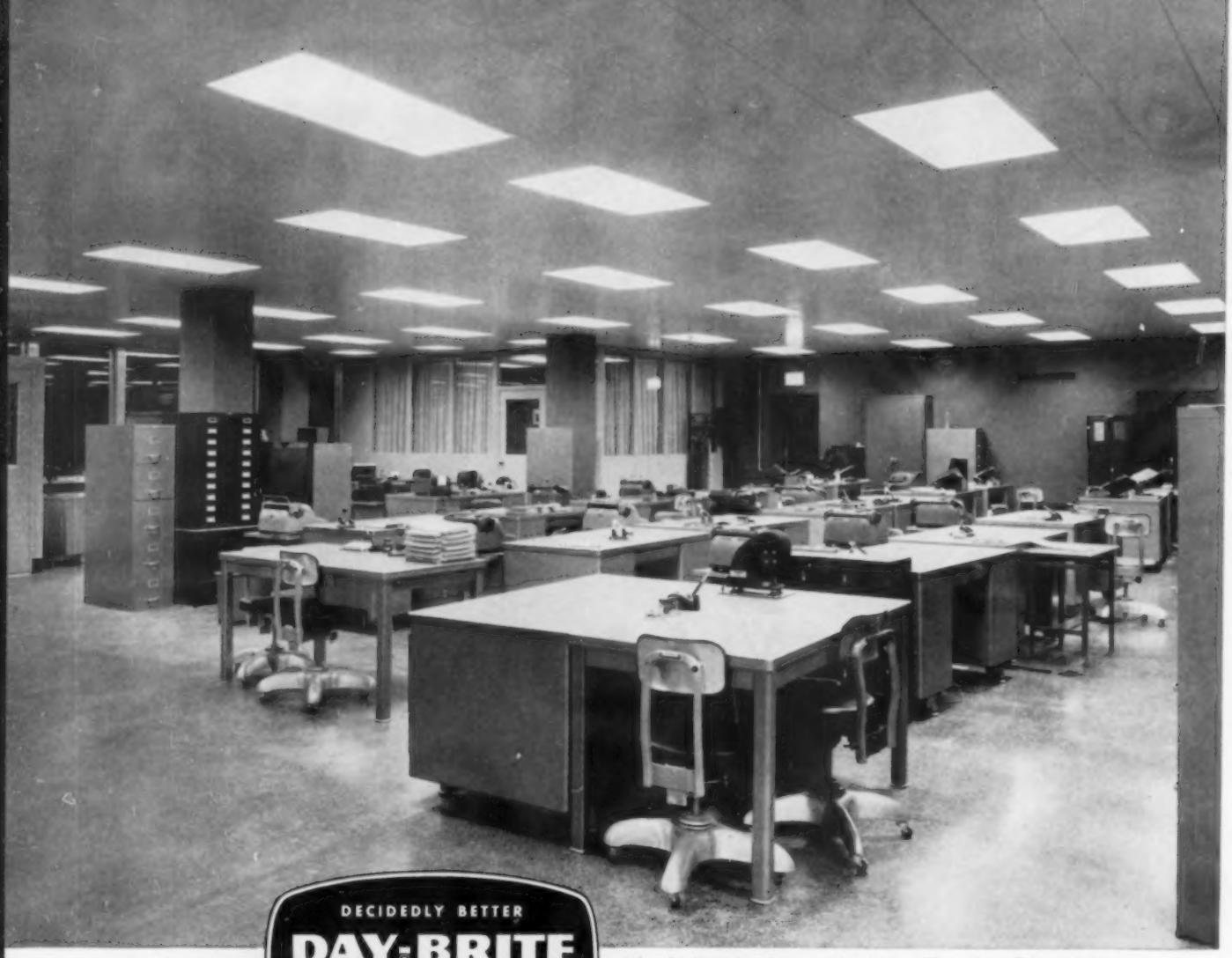
Custom Design at Stock Prices
Uses any Panel Material
Simple, Speedy Erection
Prompt Shipment
Light Weight—high strength
Ideal for schools, churches,
small office buildings, general
commercial structures

The Simmons Company, Jacksonville Plant
Fuller & Beckett - A. G. Smith, Architects, Atlanta
Flagler & Co., Engineers and Builders, Atlanta
Brown & Grist Representatives:
George C. Griffin Co., Jacksonville
Industrial Equipment Co., Atlanta

130,000 square feet of manufacturing plant completed seven months after ground-breaking! And Brown & Grist played an important part in this fast-moving project.

With *Sagebrush Green Mirawal* panels installed at the factory, the Brown & Grist aluminum window walls were delivered as complete units exactly on schedule. Their simple construction features assured fast erection without special crews. Let our engineers work with you to solve your problems—at no obligation to you. And write for Brown & Grist's Sweets Catalogs today!

BROWN & GRIST, INC. B&G **25 TYLER AVENUE, WARWICK, VIRGINIA**



DECIDEDLY BETTER
DAY-BRITE
Lighting Fixtures

No shadows or glare in this large office area. Fixtures are Day-Brite Mobilex.®

No "OR EQUAL" can match it!

Comfortable . . . compatible . . . Day-Brite lighting. Specify it. Stick with it. You'll *never* be sorry. For, in quality of lighting and construction, no other fixture on the market can match Day-Brite. There are no "or equal's."

Strong words . . . and we can back them up. Ask your Day-Brite representative to arrange a demonstration. He's listed in the Yellow Pages. See, compare Day-Brite fixtures—side by side—with any other fixtures *at any price.*

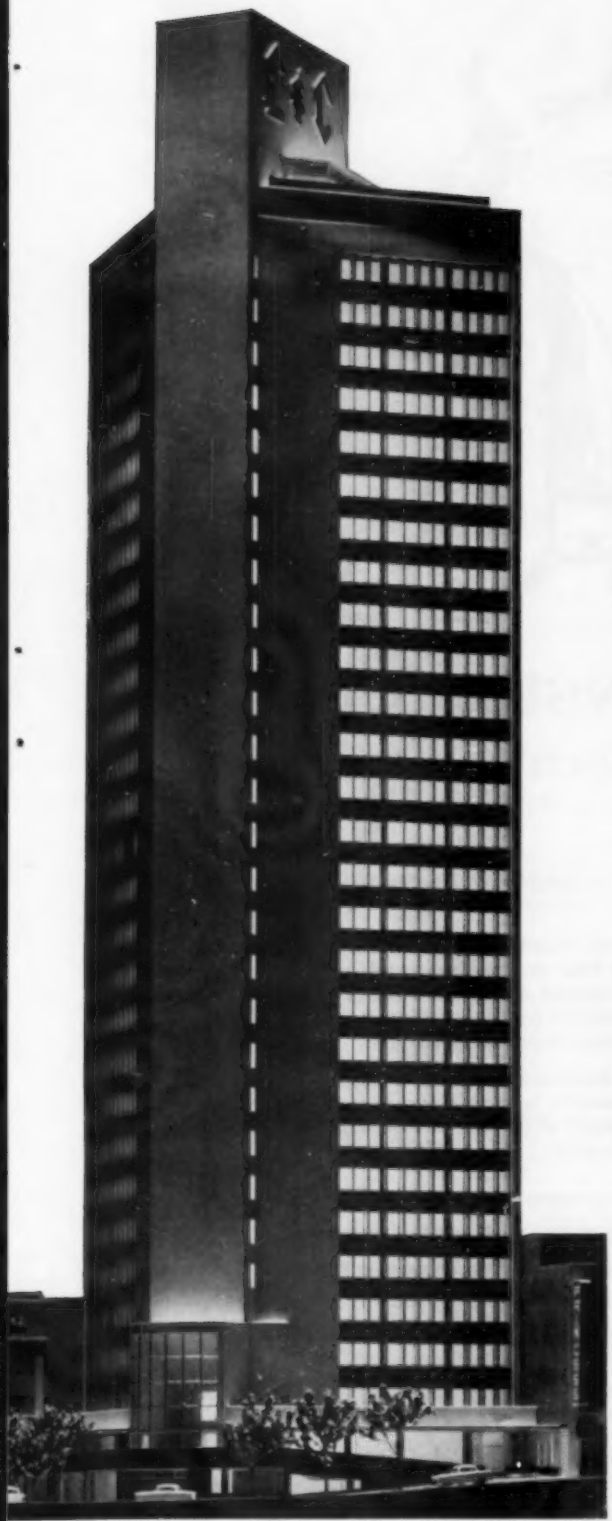
Inspect. Handle. Ask questions. Look at the line. Compare the lighting. Compare fixture design. Be a tough critic. Choose slowly . . . carefully . . . wisely.

Isn't that the best way to select lighting . . . to satisfy clients . . . to uphold your own reputation? It's the best way to *see* Day-Brite superiority for yourself!

FOR FURTHER INFORMATION
SEE OUR CATALOG IN SWEET'S
OR WRITE FOR COPY

DAY-BRITE LIGHTING, INC.
5405 Bulwer Ave., St. Louis 7, Mo.
Day-Brite Lighting, Inc., of California,
530 Martin Ave., Santa Clara, Calif.
71162

NATION'S LARGEST MANUFACTURER OF COMMERCIAL AND INDUSTRIAL LIGHTING EQUIPMENT

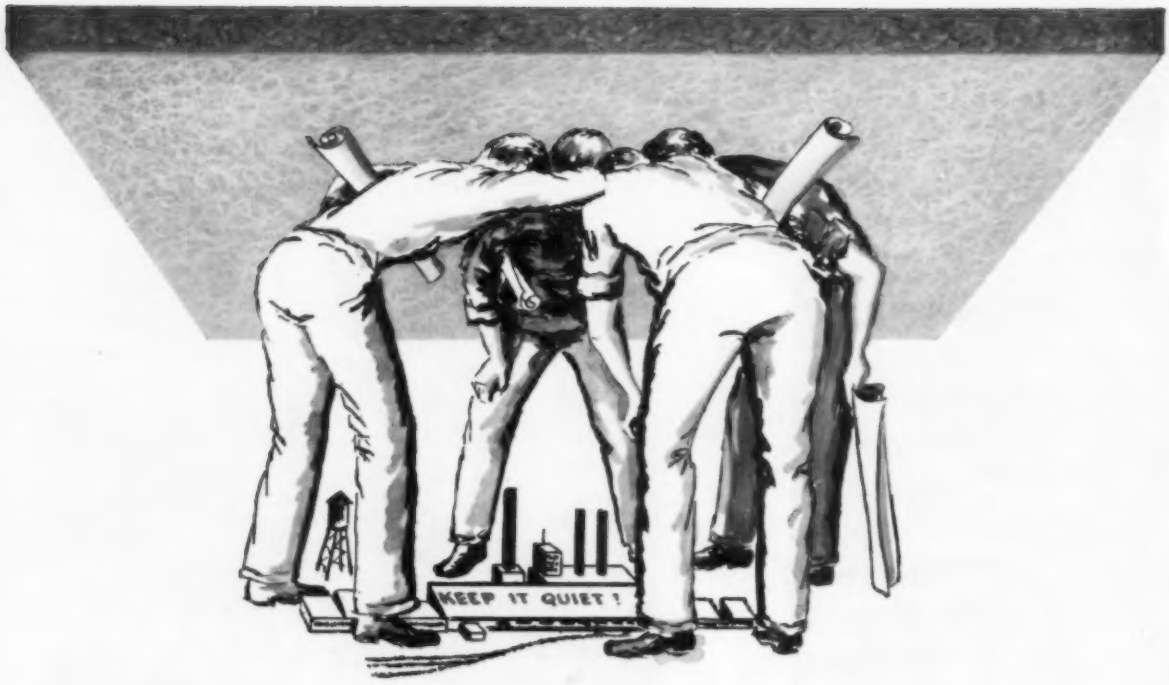


Slim and stately, Nashville's new Life & Casualty Tower is the Southeast's tallest commercial structure. Offices are lighted with Day-Brite fixtures.

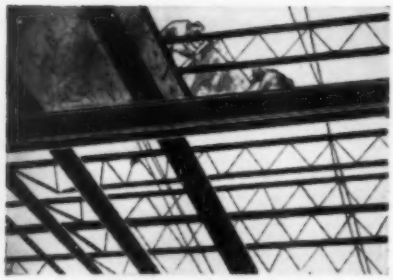
EDWIN A. KEEBLE ASSOCIATES, Architects
BURNS & THORPE, Associated Mechanical Engineers
J. A. Jones Construction Company, General Contractors
Sadler Electric Company, Electrical Contractor
Others—General Elec. Supply Co., Distributor

Think of Day-Brite lighting fixtures as a hard-working production tool. Here they make seeing easier, increase worker efficiency, reduce turnover and absences, encourage cleanliness and order.

Day-Brite lighted executive office looks modern, reflects prestige, welcomes visitors and customers.



The HUSH-HUSH story of **INSULROCK** *or, How Architects Specify "Hush"*



One big reason why modern architects specify Insulrock is that Insulrock helps hush up noises.

The underside of Insulrock Building Slabs—which have been used as a weather-resistant, easily laid, sturdy, strong roof decking—provides a good-looking, off-white exposed acoustical ceiling that absorbs up to 85% of the incident noise in an Insulrock-ceilinged area. This helps kill clatter, calm nerves, increase everybody's efficiency.

Insulrock can absorb so much sound because Insulrock Building Slabs are made of long, chemically treated, pressure-bonded, portland-cemented wood fibers arranged at random, honeycombed with thousands of sound-deadening air spaces.

Other Insulrock economies especially appeal to architects:

Incombustibility (listed by Underwriters' Laboratories) . . .

Good-Looks, with attractive off-white random texture . . .

Easy Application, as roof decking to wood or steel framing . . .

Long, Long Service, with excellent resistance to weather, moisture, fungi, insects . . .

Notable Savings, in application and labor time, in heating and air-conditioning insulation costs, in upkeep costs, in lighting costs.

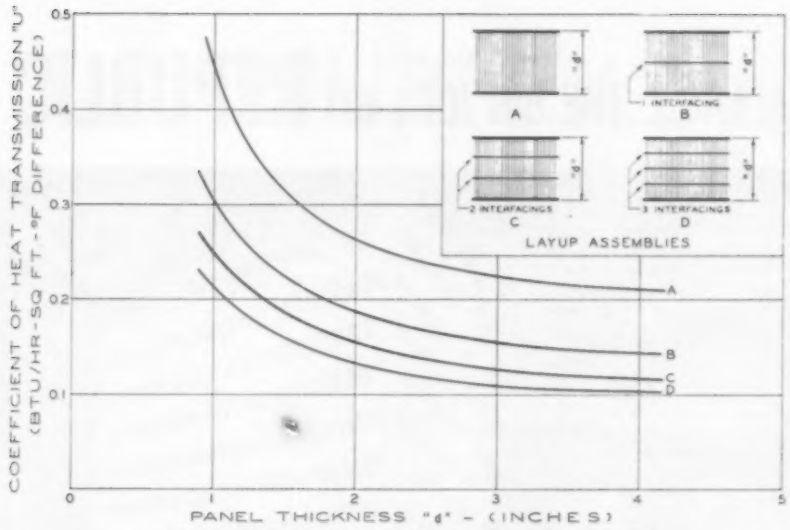
Send for the new Insulrock folder

Insulrock®

Division of The Flintkote Company

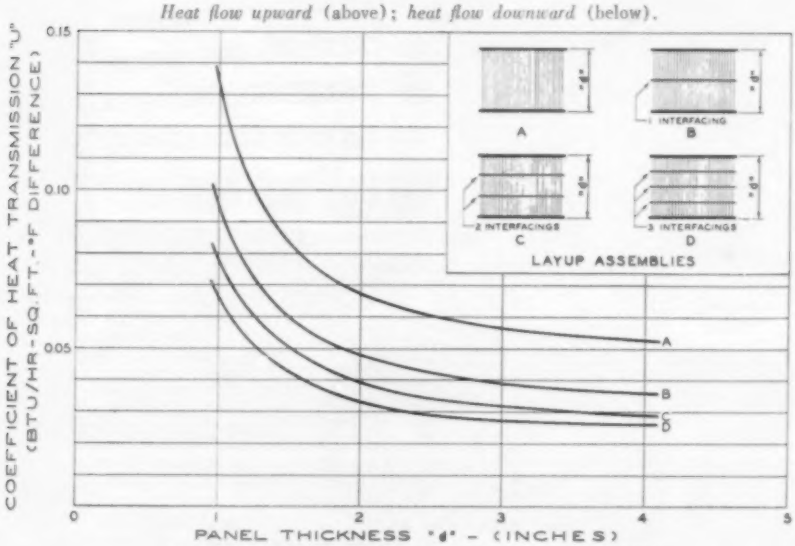
FLINTKOTE BUILDING MATERIALS

INSULROCK COMPANY
Sales Office: EAST RUTHERFORD, NEW JERSEY
Plants: LINDEN, NEW JERSEY • RICHMOND, VIRGINIA • NORTH JUDSON, INDIANA



THERMAL CHARACTERISTICS OF PANELS - ALUMINUM FACED
USING 90#-18 % CORE - 1/2" CELL SIZE - INTERFACINGS OF PHENOLIC IMPREGNATED KRAFT
PANEL IN HORIZONTAL POSITION - HEAT FLOW UPWARD

Heat flow upward (above); *heat flow downward* (below).



THERMAL CHARACTERISTICS OF PANELS - ALUMINUM FACED
USING 90#-18 % CORE - 1/2" CELL SIZE - INTERFACINGS OF PHENOLIC IMPREGNATED KRAFT
PANEL IN HORIZONTAL POSITION - HEAT FLOW DOWNWARD

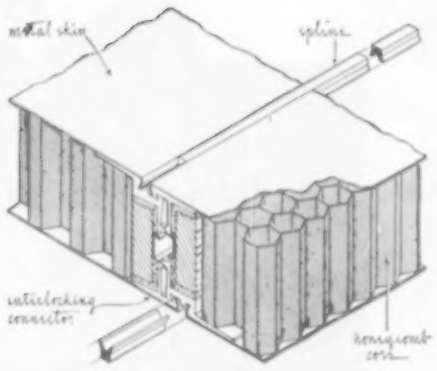
Loading Table: Aluminum-faced Sandwiches (3003-H14 Alloy)

Simple-span bending (flatwise)

Sandwich thickness d	Facing thickness t	Weight lbs/sq ft	Total safe uniformly distributed load in lbs per sq ft of span — Clear span, ft													
			4	6	8	10	11	12	13	14	15	16	17	18	19	20
6"	0.032"	2.5				104	90	76	65	56	49	43	38	34	31	28
	.040	2.7				136	112	95	81	70	61	54	48	43	38	35
	.051	3.0				172	142	120	101	88	77	68	60	54	48	44
	.064	3.2				215	178	150	128	105	97	85	76	68	61	55
4"	.032	2.0			105	72	60	50	43	37	32	28	25	22	20	18
	.040	2.3			138	90	74	63	53	46	40	35	31	28	25	23
	.051	2.5			176	114	94	79	68	58	51	45	40	35	32	29
	.064	2.9				142	117	99	85	73	64	56	50	45	40	36
3"	.032	1.7		143	92	53	44	37	31	27	24	21	18			
	.040	2.0		180	102	67	55	47	40	34	30	26	23	21	19	
	.051	2.3			131	84	70	59	50	43	38	33	29	26	24	22
2"	.025	1.3	161	75	43	28	23	19								
	.032	1.5	205	95	55	35	29	24	21	18						
	.040	1.7		118	67	44	36	30	26	22	19	17				
1"	.025	1.1	78	36	21											
	.032	1.3	99	46	26	17										

P/F Core type: (Color code) — B4 — 99 (18) ½ | A4 — 80 (18) ½ | B6 — 99 (18) ¾ | A6 — 80 (18) ¾

Notes: Minimum bearing 2"; loads shown are limited by longitudinal stress carrying capacity of facings; total safe load includes weight of sandwich; when holes are made in facing member, the safe load shall be reduced accordingly; factor of safety = 2.

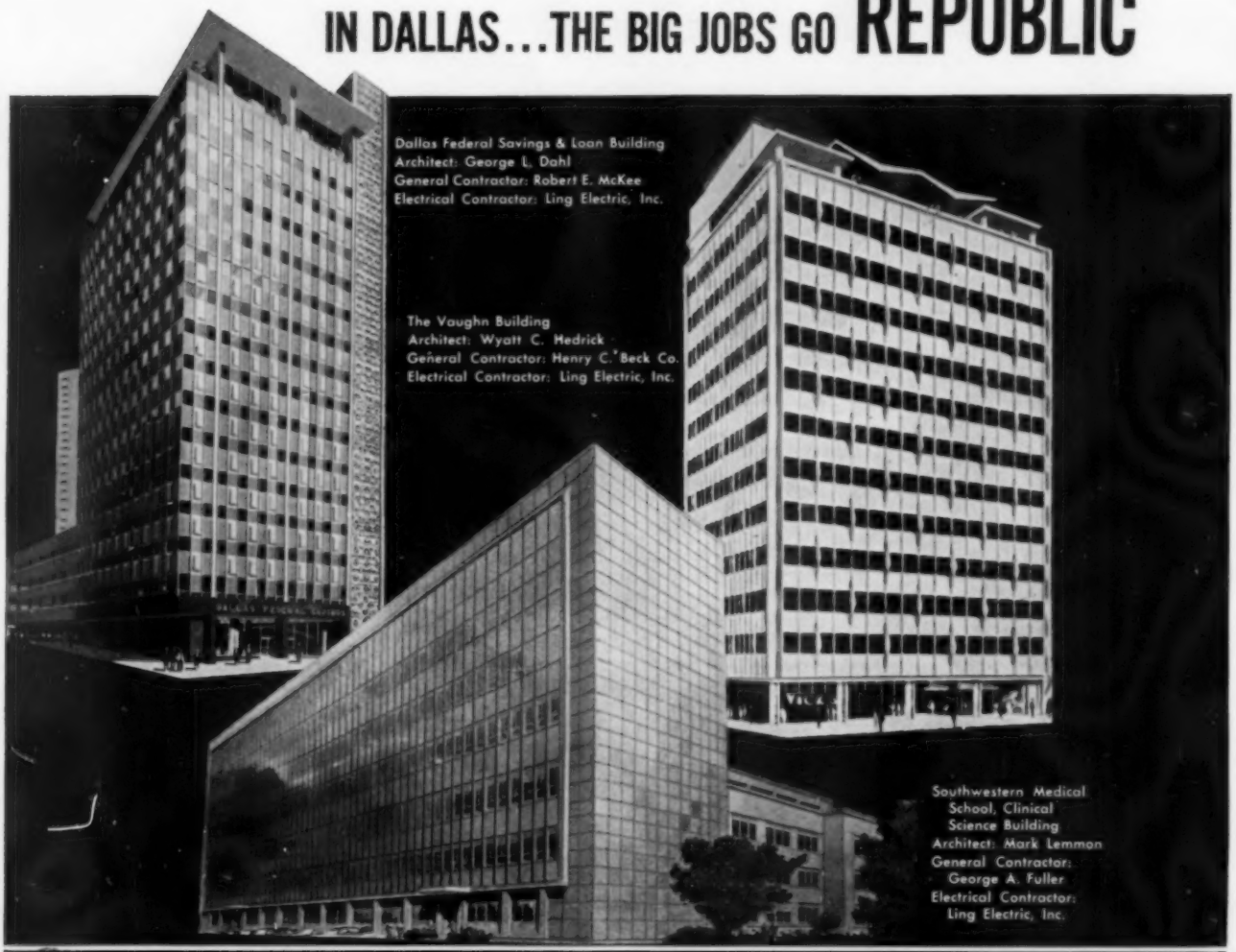


Just announced! Taking a tip from jet-aircraft technology, Panelfab Products, Inc. has completely researched, developed, and now announced a structural-panel material claimed to have the greatest strength-weight ratio available for building construction *(sketch above)*. A welcome addition to the architects' and engineers' resources of multi-use contemporary materials, these stressed-skin structural sandwiches can have countless uses in architecture—from small-home construction (including exterior walls, interior partitions, and flush doors) to portable-school construction and multistory commercial buildings; for folded-plate roofs, lightweight hangar doors, even solar walls; and, as well, many other enclosing and separating applications.

Panelfab's development of a flush-type connector *(note detail)* for structural sandwich constructions contributes substantially to economy of erection time and helps to make possible the many applications appropriate for this material. Now possible is a new look in panel curtain-wall construction which eliminates the conventional grid- or mullion-type systems—which in themselves may be as expensive, if not more so, than the panels. Stressed-skin walls of this kind also have the advantage of being able to avoid through-wall metal contact thus adding to thermal efficiency *(compare charts for upward and downward heat flow)*. Also inherent in these skin-core laminates are remarkable properties in bending for both simple and cantilever designs *(loading table, left)*. Allowable shearing stresses permit minimum bearing areas for required design load. Investigation has further shown that the panels can be employed satisfactorily as loadbearing columns. Units can be combined with practically any traditional or contemporary surfacing material, natural or manufactured—marble, ceramic mosaics, vinyl, porcelain enamel, stainless steel, aluminum, etc.

Panelfab Products, Inc., 2000 N. E. 146th St., North Miami, Fla.

IN DALLAS...THE BIG JOBS GO REPUBLIC



Dallas Federal Savings & Loan Building
Architect: George L. Dahl
General Contractor: Robert E. McKee
Electrical Contractor: Ling Electric, Inc.

The Vaughn Building
Architect: Wyatt C. Hedrick
General Contractor: Henry C. Beck Co.
Electrical Contractor: Ling Electric, Inc.

Southwestern Medical School, Clinical Science Building
Architect: Mark Lemmon
General Contractor: George A. Fuller
Electrical Contractor: Ling Electric, Inc.

Arthur Kramer Elementary School
Architect: Harwood K. Smith
General Contractor: Yates Construction Co.
Electrical Contractor: Ling Electric, Inc.

REPUBLIC

REPUBLIC STEEL

World's Widest Range of Standard Steels

ELECTRUNITE® E.M.T. BECAUSE...

The Best Costs LESS INSTALLED

"Give me a building today designed to meet tomorrow's demands." This common request is the reason why more and more architects, designers, and electrical engineers specify Electrical Metallic Tubing (E.M.T.) for America's foremost commercial, institutional, public, and industrial buildings.

And in over-all Electrical Metallic Tubing (E.M.T.) economies, *the best costs less* installed! When using E.M.T., every coupling is a union . . . the galvanized finish is not cut away as in a threading operation. Republic E.M.T. may be bent with ease and the galvanized coating will not chip or flake.

Republic ELECTRUNITE E.M.T. offers pull-in, pull-out wiring-system flexibility. It is designed to provide adequate raceway wiring today . . . with built-in future capacity, for adequate wiring facilities tomorrow. It is further proof that with Republic ELECTRUNITE E.M.T. *the best costs less installed!*

This functional advantage—plus installation features—is why Republic ELECTRUNITE E.M.T. is used throughout the construction of four major commercial buildings in the Dallas area. Republic ELECTRUNITE E.M.T. is "INCH-MARKED"® . . . easy to measure—"GUIDE-LINED" . . . easy to bend —"INSIDE-KNURLED" for easy wire-pulling.

With Republic ELECTRUNITE E.M.T. quality, you can give your clients true wiring-system economy, reduce over-all construction costs, and get the job done on schedule. Be sure to specify Republic ELECTRUNITE E.M.T. with your next new building recommendations. Only genuine Republic E.M.T. is "INCH-MARKED" and "GUIDE-LINED".

Write today for handy reference booklet giving complete facts.

. . . other quality Republic Building Products

Truscon "O-T"® Steel Joists for floor and roof supports are light, strong, and fire-resistant. A product of Republic's Truscon® Division, they're easy to handle, lessen the time and labor required for erection, save material in supporting frame-work and foundations. Send for illustrated booklet with complete information and facts.

Truscon Vision-Vent® Window Walls make any building bright, light, and weathertight. Truscon also offers window types and sizes for every type of construction. All are engineered to the application. All enjoy Republic's reputation of quality. Send for illustrated catalog with complete facts—or contact your nearest Truscon representative.

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- ☐ Republic ELECTRUNITE E.M.T.
- ☐ Truscon "O-T" Steel Joists
- ☐ Truscon Steel Windows

Name_____ Title_____

Company_____

Address_____

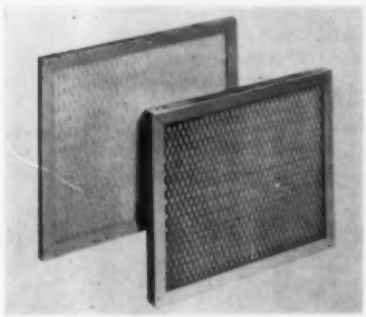
City_____ Zone____ State_____

p/a products

(Continued from page 185)

air and temperature control

GS Winter Air Conditioner: new gas-fired winter air conditioner uses no floor space, may be installed in crawl spaces, attics, or suspended from basement ceilings. Automatic furnace can be used with natural, mixed, or manufactured gases; set directly on combustible flooring. Features include: all-welded heavy-gage steel heat exchanger of section design and large multiblade centrifugal blower, self-lubricated bearing, adjustable speed control and cast-iron drill port burner. Available in four models. Thatcher Furnace Co., Garwood, N. J.



"Skuttle-Aire" Filter: new filter, fabricated from special plastic filtering material said to contain built-in electrostatic properties, gives uniform filtering, minimum air resistance, dependability. Washable, the filter is available in ½ in. and 1 in. thicknesses—10 standard one-inch sizes, 38 standard ½ in. sizes. Each filter *(above)* encased in riveted aluminum frame, contains four layers of thermoplastic filtering media between expanded metal grills to increase rigidity. May be used in warm-air furnaces, central air-conditioning systems, room coolers. Skuttle Manufacturing Co., Milford, Mich.

construction

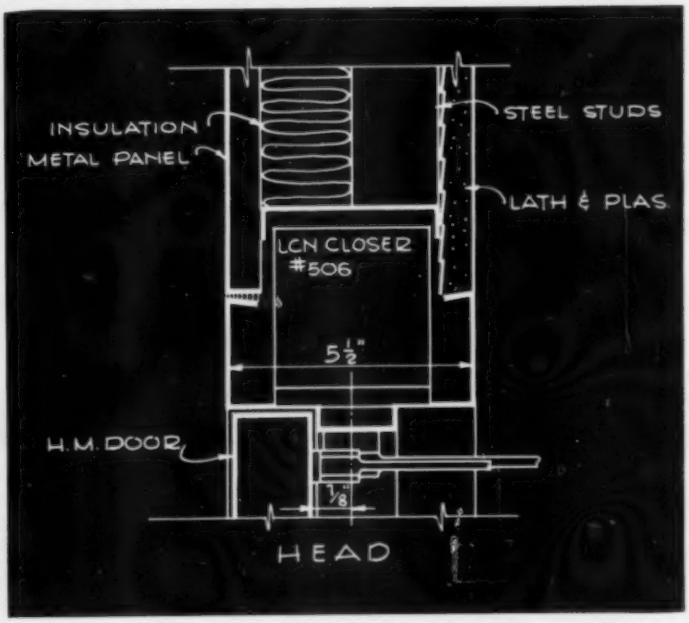
Plastic-Grid Sandwich Panel: new panel employing decorative plastic-grid core is designed for use in curtain walls and skylights. Reinforced-plastic-grid is said to minimize thermal instability. Advantages include strength, light weight, controlled translucence, insulation, exterior pattern. Unit will be available as basic building material and as skylight unit with perimeter permanently bonded. "U" factors are from .04 to .05. Various degrees of light transmission can be specified. Design Industries Div., Architectural Plastics Corp., 1355 River Rd., Eugene, Ore.

Breco Prefabricated Roof Curb: recently produced roof curb offers a standardized curb in a tested design. Breco curb is reported to eliminate wood or steel framing; it can be flashed by nailing to treated wood block. Easy assembly is featured. Available in 22 standard square sizes, from 6" to 72" throats, curbs can be ordered to frame rectangular openings of any size. Material of curbs: zinc-coated steel sheet and treated-wood nailer. Breese Bros. Co., Cincinnati, Ohio.

doors and windows

Structoglas "A" Translucent Plastic Windows: glass-fiber reinforced plastic panes developed particularly for industrial and commercial use. Shatterproof, waterproof, and resistant to heat penetration, this glass reduces maintenance costs and aids climate control. Light provided is bright, diffused, glare-free. Material is available in standard glazing sizes; colors: green, blue, transparent; smooth or grain surface effect. Structoglas Div., International Molded Plastics, Inc., Cleveland 9, Ohio.

(Continued on page 192)



CONSTRUCTION DETAILS

for LCN Overhead Concealed Door Closer Installation
Shown on Opposite Page

The LCN Series 500 Closer's Main Points:

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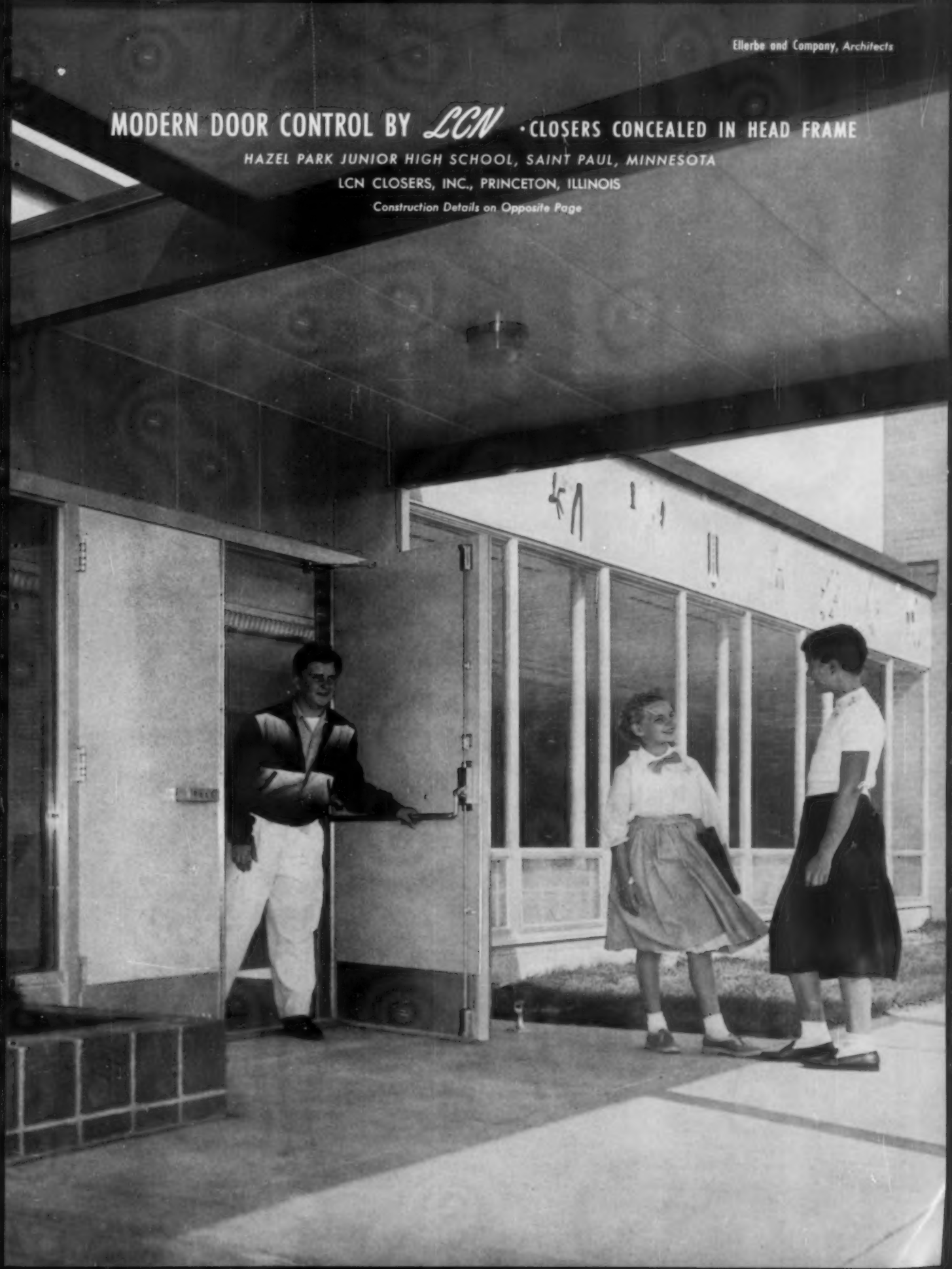

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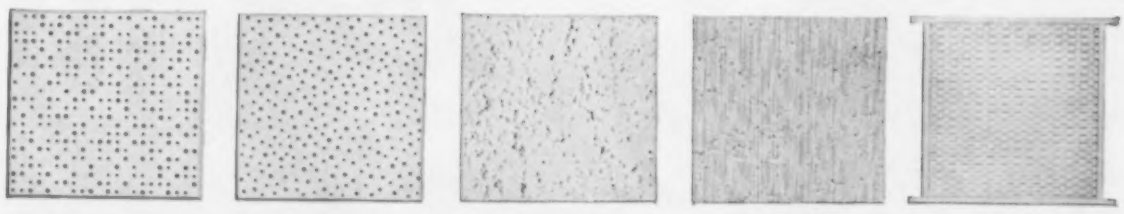

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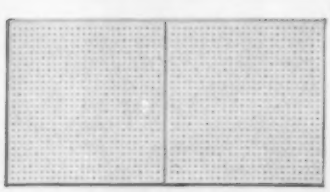

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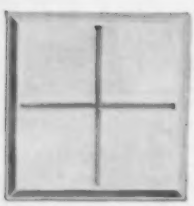

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(Continued from page 188)

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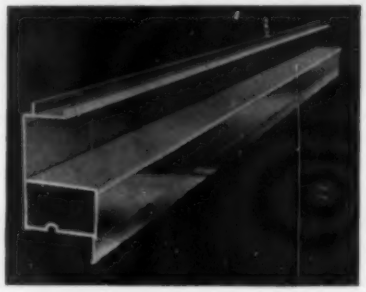

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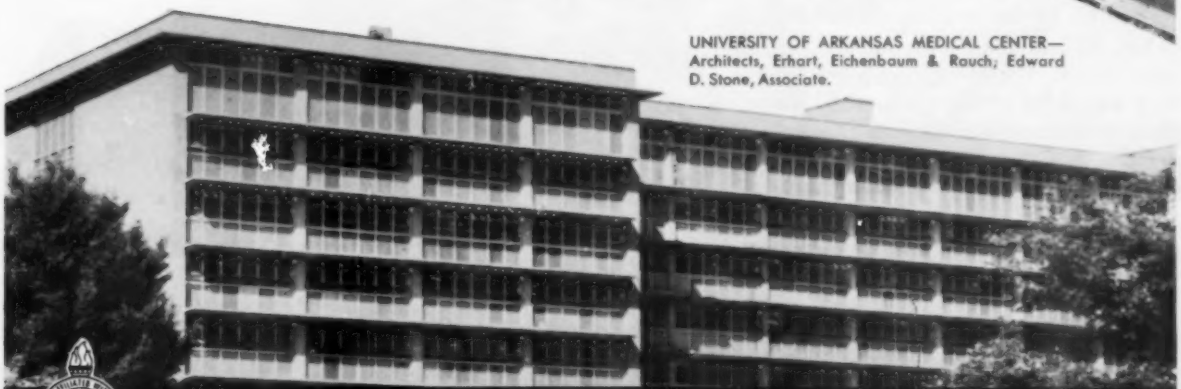

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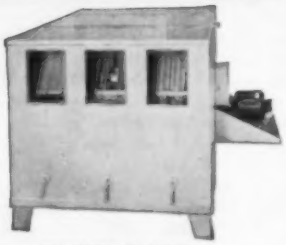
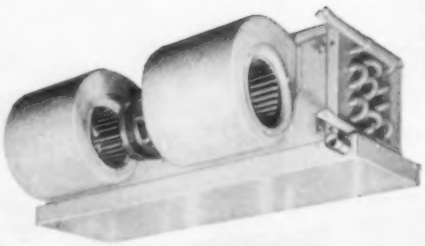


MULTI-ZONE UNIT



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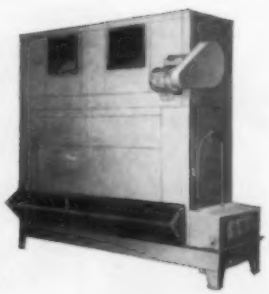

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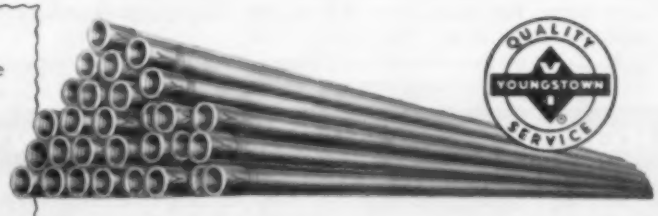

books received

Form in Civilization. W. R. Lethaby. Oxford University Press, 114 Fifth Ave., New York, N. Y., 1957. 196 pp. $2.75

Foundations: Design and Practice. Elwyn E. Seelye. John Wiley & Sons, Inc., 440 Fourth Ave., New York, N. Y., 1956. 436 pp., illus. $16

human bias

Tropical Architecture. *Maxwell Fry and Jane Drew. Reinhold Publishing Corp., 430 Park Ave., New York, N. Y., 1956. 320 pp., illus., $10*

This is a good-looking book with a pleasant, easy to read layout, and with few of those stunt typographical arrangements which spoil so many good books today. Maxwell Fry established his reputation as the leading English modern architect when modern architecture was new, way back in the 20's; he and his wife, Jane Drew, have since had wide experience with tropical building in many parts of the world. Perhaps the most significant aspect of the Frys' approach to architecture—and this was the real significance of the modern movement before the recent formalistic reaction—is their human and sociological bias; not architecture for architecture's sake but architecture to serve the needs of man, to make him more at home in his environment, to make working life easier and social life more successful. These they consider to be the paramount problems, as did Gropius and his follow workers at the Bauhaus.

A natural result of this sociological approach is a special interest in the building as part of a group of buildings, and the group as part of a town. Just as our modern transport and communication systems have reduced old national frontiers to absurdity, so our dependence on highly elaborate community services like sewage, water supply, fire protection, education, and so on, means that buildings are no less dependent on each other and on the whole urban complex than are individuals upon society in general. The whole problem of urban and rural development is therefore implicit in the discussions in the present volume, and, moreover, it gives them breadth as well as substance.

Finally, the authors' experience with conditions in underdeveloped areas — and their own humanity— have forced them to see the problem of tropical architecture not only as a technical exercise in insulation, ventilation, and termite protection, but also as one of the great social and political problems of our time, the problem of the peaceful integration of the vast but technically backward populations of the tropics into

(Continued on page 200)

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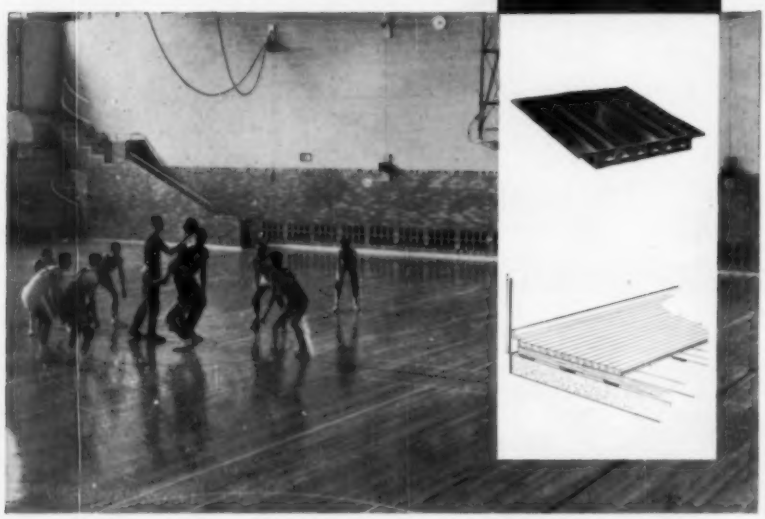

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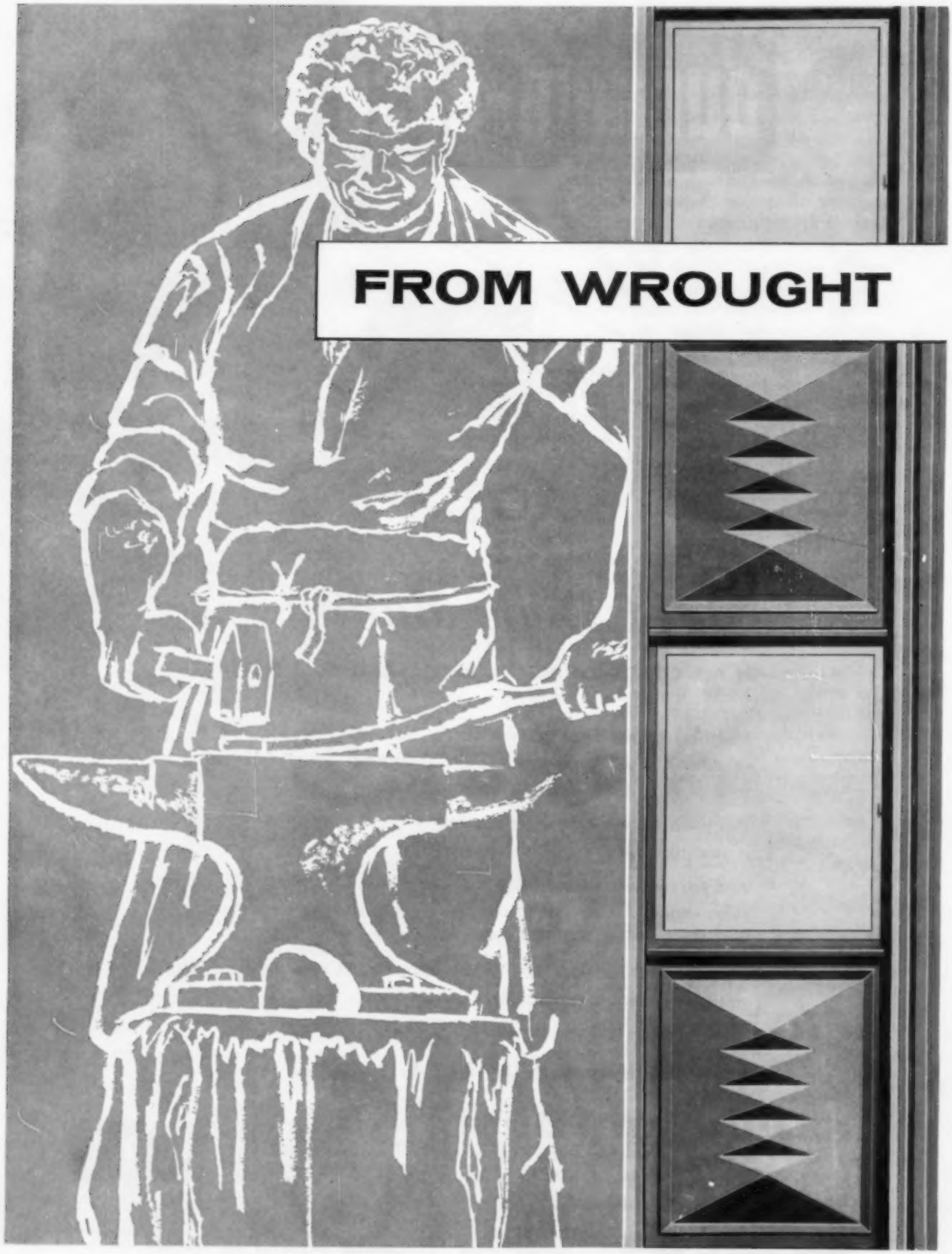

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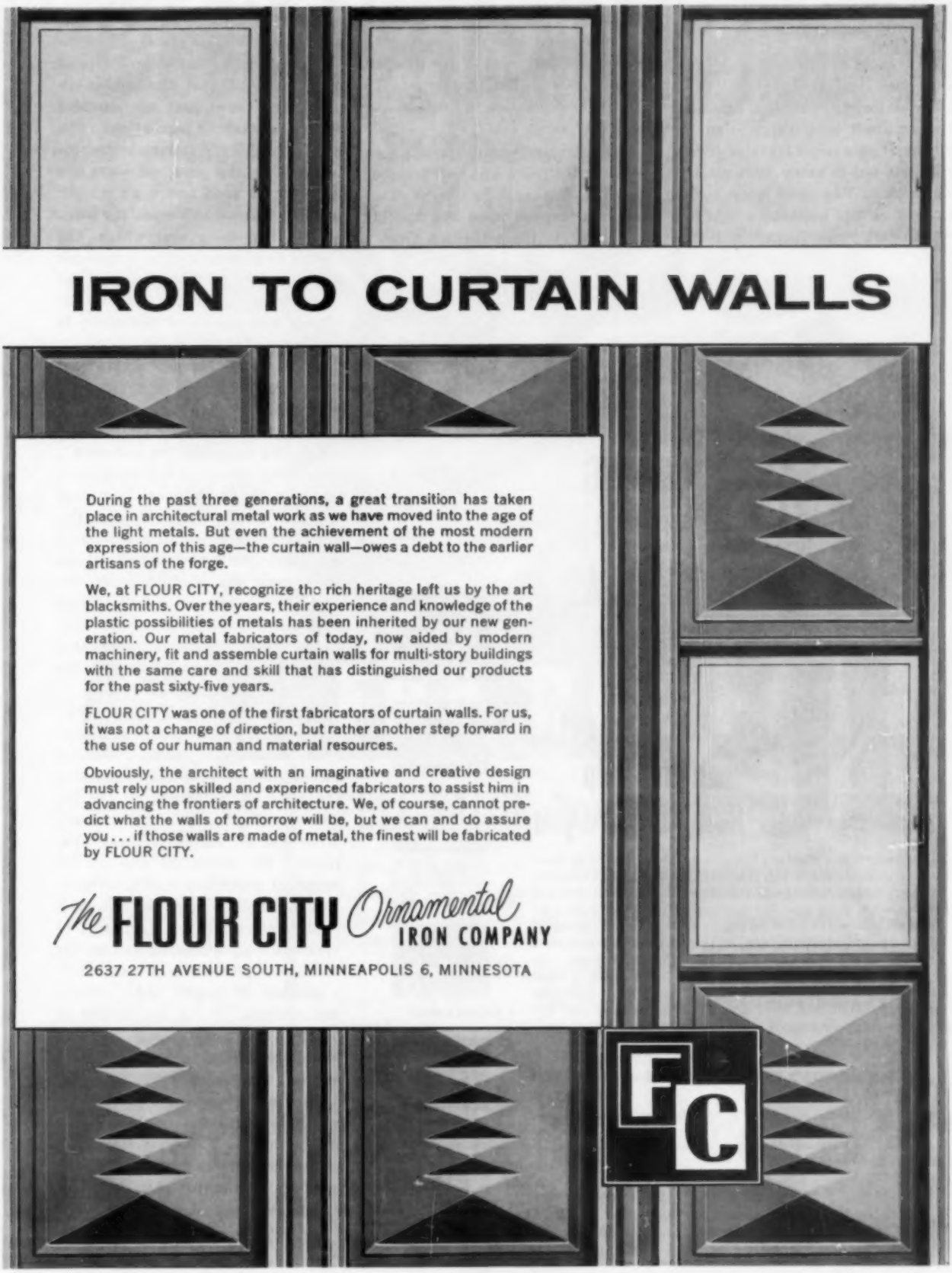
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(Continued from page 196)

a world society which is becoming industrialized everywhere. Can the change from age-old ways of living, primitive but in many ways satisfying ways of life based upon simple agriculture and handcrafts, can this change to a sophisticated existence, dependent upon elaborate machine techniques, be brought about with neither the harshness of the Russian Revolution nor the squalor of the Industrial Revolution in England and America?

Today tropical architecture is high politics: the peace and well-being of the fortunate nations of the West may well depend upon how quickly and smoothly the transition from a simple to a complex life can be made, and the smoothness of the transition will to an important degree depend upon the quality of the homes, villages, and towns that are provided for the awakening populations. The greatest danger is during the interim when the good old ways are lost and the good new ways not yet properly learned and especially when —as is happening everywhere—the change is accompanied by large-scale migrations from the country to the town, from the village with its intimacy and its social restraints to the impersonal and chaotic city.

The authors are well aware that satisfactory solutions to these problems will emerge only when the minds and hearts of the local peoples are willing to accept "the new ways"; but, in the meantime, one of the best auguries for the future is that there are men and women like Max Fry and Jane Drew who are willing to give their skill with humility and their sympathy without condescension. The peoples of underdeveloped countries need help from the West but they have long ago decided that arrogance and exploitation are too big a price to pay for such help.

As the authors say, *Tropical Architecture* does not set out to be a textbook, although it includes detailed information on such varied items as the kind of fastenings to use for doors and windows in hurricane areas and the habits of those cockroaches for whom the glue on the spines of books is a special delicacy. But the chief value of the volume is in demonstrating the right kind of approach and reminding us that the architect's problem is pre-eminently a problem of human needs, habits, and customs, of the availability of building materials and building skills, and of the fight against pests and the weather.

This is a pleasant and useful book which to my mind would be even better than it already is if it were pruned of a certain amount of elementary information of no particular relevance to the special problems of tropical architecture.

DENIS WINSTON
Professor of Town & Country Planning
University of Sydney

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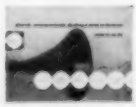
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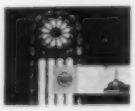
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(Continued from page 22)

if the work of the Technical Committees which this Chapter and other Chapters have established is to proceed smoothly and uninterruptedly.

H. T. J. MARTIN, President
Dallas Chapter, CSI
Dallas, Texas

•

Dear Editor: We read with interest Rosen's article, "Standardization of Specifications Trade Sections." We, in this area, have been using such a system for several years and we find that it does simplify the writing of specifications as well as preparation of estimates.

The development and promulgation of our system was a project of Kansas Builder's Forum. The active committee included representatives from the builders as well as an architect. It has been well received and is in quite general use.

A briefed copy of the list of section headings, with some elaboration to clarify the usage of certain sections, is appended. You will note that this list reflects our geographical and climatic conditions to some extent as well as some construction trends, which were in effect at the time it was compiled.

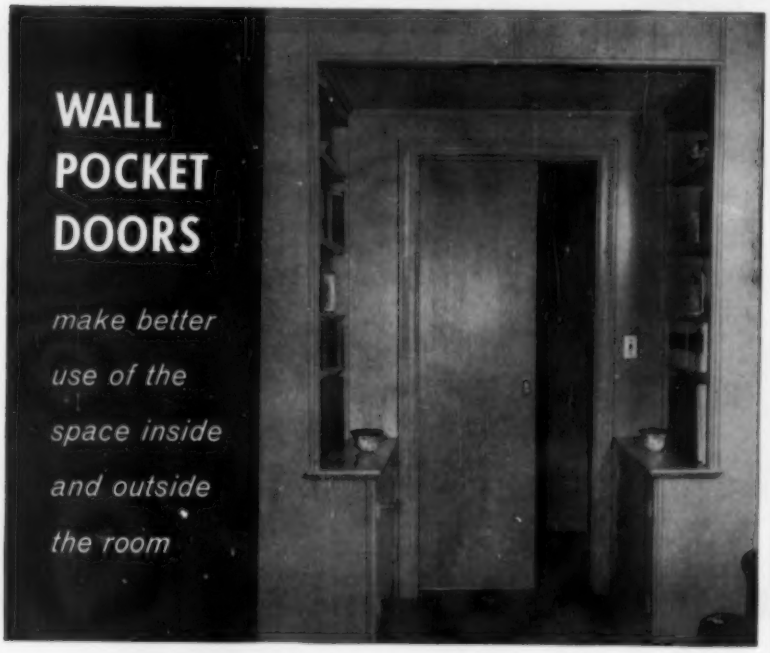
For instance, we have no section on waterproofing, which, when it occurs, is usually placed with other bituminous materials in *Section 17: Roofing*, etc. Also, *Section 8: Cement Finishes* is hardly of sufficient importance to justify a section unless there is architectural concrete on the job. We find that *Section 15: Metal Specialties* and *Section 30: Miscellaneous Equipment* are most useful in keeping the specialty items out of the basic sections such as miscellaneous metals and carpentry. This is most helpful to the sub-bidders and while it puts the responsibility for these specialty items on the general contractor, it does call his attention to them as a group.

We are very sure that the use of the standardized list is helpful in the preparation and use of specifications. We trust that you may find our list and comments useful in your study of a universally acceptable list.

•

1 General Conditions
2 Special Conditions
3 Demolition (or Preparatory Work or Other)
4 Excavation, Grading and Site Work
5 Special Foundations
6 Concrete
7 Reinforcing Steel
8 Cement Finishes
9 Masonry
10 Cut Stone
11 Structural Steel
Steel Joist, etc.
12 Roof Deck
Steel
Gypsum
Insulating
13 Miscellaneous Metals
14 Ornamental Metals
15 Metal Specialties
Metal Windows
Hollow Metal
Toilet Partitions
Rolling Shutters
Aluminum Doors
Etc.
16 Sheet Metal
17 Roofing and Roof Insulation
18 Carpentry
19 Millwork
20 Calking and Weatherstripping
21 Lathing and Plastering
22 Marble and Tile
23 Terrazzo
24 Special Wall Finishes
25 Composition Floor Coverings
26 Glass and Glazing (Mirrors)
27 Acoustical Treatment
28 Finish Hardware

(Continued on page 206)



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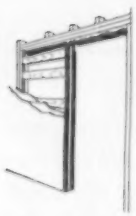

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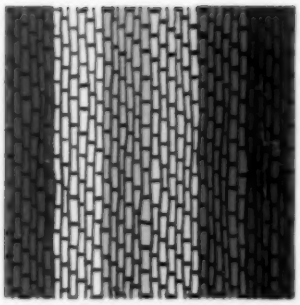

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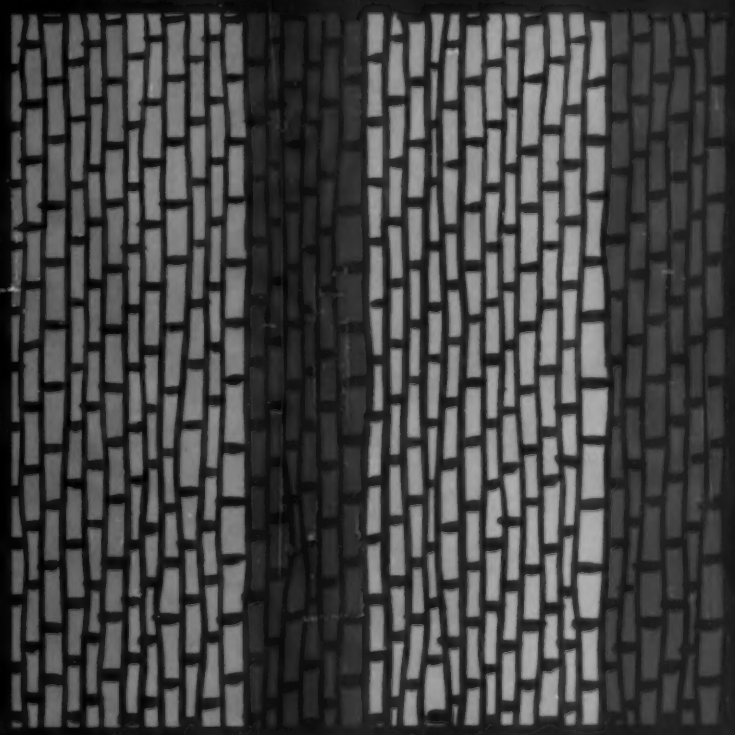

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The fourth design in Pomona Tile's "Distinguished Designer Series" is Dorothy Liebes' Kashmir, an exciting new concept in decorative ceramic tile. Miss Liebes has suggested Kashmir as both a floor and wall treatment in a unique new application. An extra-hard glaze makes Kashmir ideally suitable for either residential or light commercial installations. It is available in three beautiful color schemes—blue-green, red-orange, and multi-color. For further information, consult your nearest contractor or visit one of Pomona's convenient showrooms.

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POMONA TILE

Scott Towers, Long Branch, N. J., was designed by Erwin Gerber and A. Pancani, architects of Newark, N. J. *General contractor:* Lawrence Builders, Inc., Long Branch, N. J.

STEEL JOISTS IN APARTMENT ROOF STRUCTURE HELP KEEP MAINTENANCE COSTS DOWN

These two attractive apartment houses built on an ocean-front property in Long Branch, N. J., are known as Scott Towers. Only a step from the beach, Scott Towers also has its own swimming pool in a court between the buildings, and plenty of private parking space.

Both buildings are steel-framed, and both have Bethlehem Steel Open-Web Joists in their ceiling structures. The use of these steel joists will contribute to economical building maintenance because they won't warp or sag. Joints and corners remain tight throughout. In addition, the use of Bethlehem Open-Web Steel Joists reduces the amount of combustible material in the building's construction, thereby helping to promote fire-safety for up to four hours.

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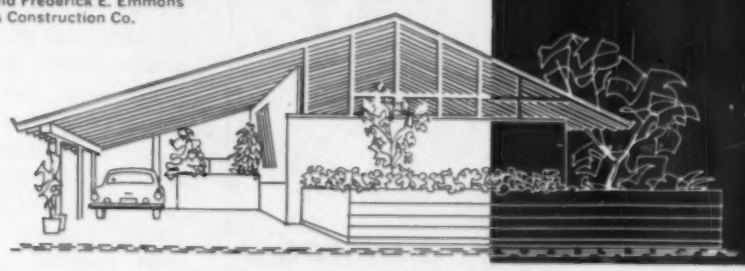
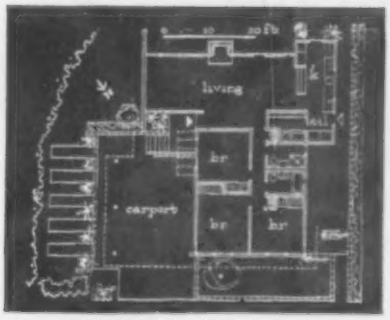
Builder: Pardee-Phillips Construction Co.





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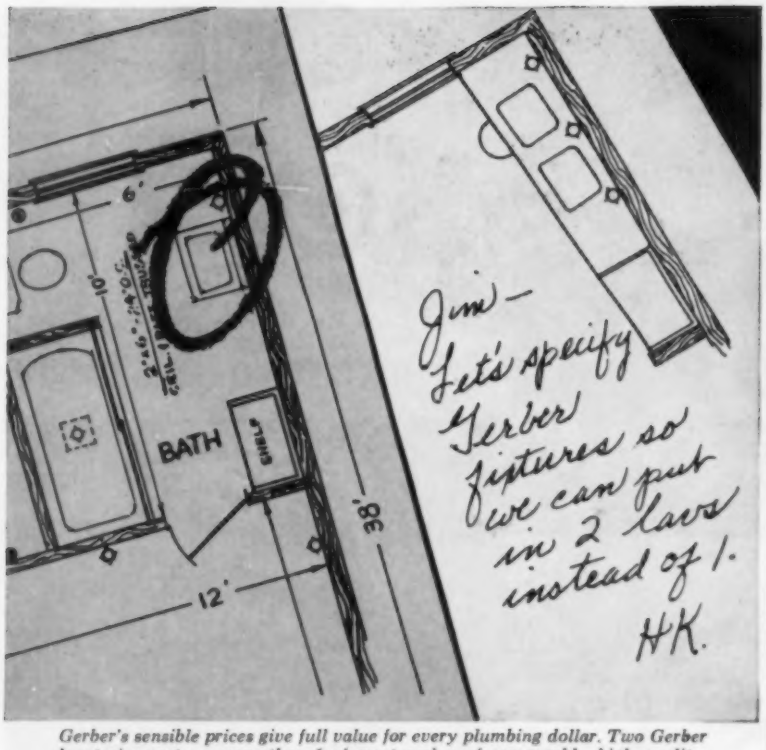

Gerber's sensible prices give full value for every plumbing dollar. Two Gerber lavatories cost no more than 1 of most makes of comparable high quality.

Design a more interesting bathroom without increasing costs

Distinctive bathroom beauty is largely a matter of smart architectural design. And you can design more interesting bathrooms for *less* when you specify Gerber Plumbing Fixtures.

Gerber offers a complete line of smartly styled fixtures that carry the Good Housekeeping Seal. They have the deluxe features usually found only in the most expensive plumbing fixtures, and they are specially designed for easy installation. Yet they are so sensibly priced, the money you save can be used to design a *more distinctive* bathroom without increasing total costs.

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Export Division: Gerber International Corp., 500 Green St., Woodbridge, N. J.

p/a views

(Continued from page 202)

29 Painting and Finishing
30 Miscellaneous Equipment
Chalkboards
Folding Doors
Fire Extinguishers
Basketball Backstops
Seating
Kitchen Equipment
Etc.
31 Alternates
40 Electrical Work
50 Plumbing
60 Heating and Air Conditioning

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Williamson, Loebsack & Associates
Topeka, Kansas

●

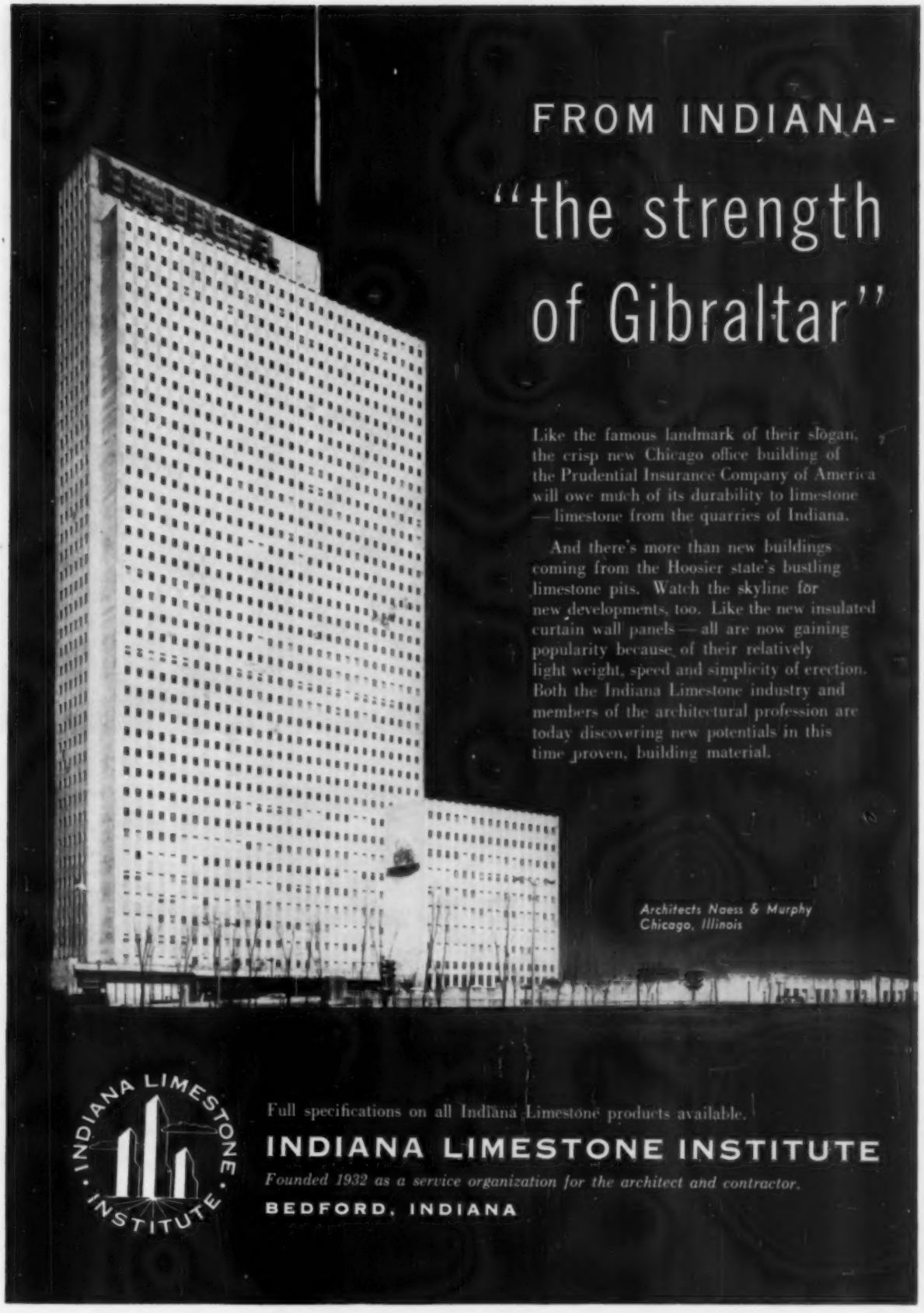
Dear Editor: There is undoubtedly some merit in John W. Foster's suggestion (VIEWS, May 1957 P/A) relative to the standardization of section numbers in construction specifications. However, it occurs to me that such a standardization should include all of the trade sections in reasonably common usage, and that those not applicable to any particular specification could be deleted or noted "omitted." This procedure seems to me to be far more desirable than the use of a short standard list with many and unrelated additional sections appended to fit the particular case involved.

I am also of the opinion that the numbering of specification sections should begin with the Bid Documents and General Conditions, rather than having those features excluded from the standard numbering. It is also my opinion that the listing of trade sections in the approximate order of their appearance on the job is more desirable than trying to group sections which might possibly be awarded to a single contractor.

I have taken the liberty of preparing a revised suggested list of standard specification sections, which is enclosed for such use as you may care to make of it. It may be considered too all-inclusive, or it may be too short. At any rate, I believe it is more realistic than the 31-section list suggested in Rosen's article.

1 Bid Documents: Notice to Bidders
Form of Proposal
Form of Contract
Form(s) of Bond(s)
2 General Conditions: Special Conditions
Supplementary Conditions
3 Inspections and Testing
4 Demolition and Site Clearing
5 Excavating, Filling, and Grading
6 Piling
7 Concrete and Cement Finish

(Continued on page 212)



FROM INDIANA-

"the strength of Gibraltar"

Like the famous landmark of their slogan, the crisp new Chicago office building of the Prudential Insurance Company of America will owe much of its durability to limestone — limestone from the quarries of Indiana.

And there's more than new buildings coming from the Hoosier state's bustling limestone pits. Watch the skyline for new developments, too. Like the new insulated curtain wall panels — all are now gaining popularity because of their relatively light weight, speed and simplicity of erection. Both the Indiana Limestone industry and members of the architectural profession are today discovering new potentials in this time proven, building material.

Architects Naess & Murphy
Chicago, Illinois

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BEDFORD, INDIANA

FIGURED GLASS MAKES . .

Used on all sides of these cheery offices of W. P. Fuller & Co., San Francisco, lustrous Mississippi Broadlite glass wraps them in a wall of living light . . . floods adjoining areas with richer, softer illumination. Sliding doors of Broadlite complete the bright, modern look.

Architects: H. P. Everett & Associates
Contractor: Coopersmith Bros., Inc.
Glazier: Pittsburgh Plate Glass Co.

Even the students farthest from the windows enjoy the benefits of conditioned daylight in the Quakerstown High School, Quakerstown, Pennsylvania. Installed in the upper two rows of sash, figured glass transmits eye-easy, natural illumination deep within the rooms. Note absence of sharp, shadows and harsh contrasts.

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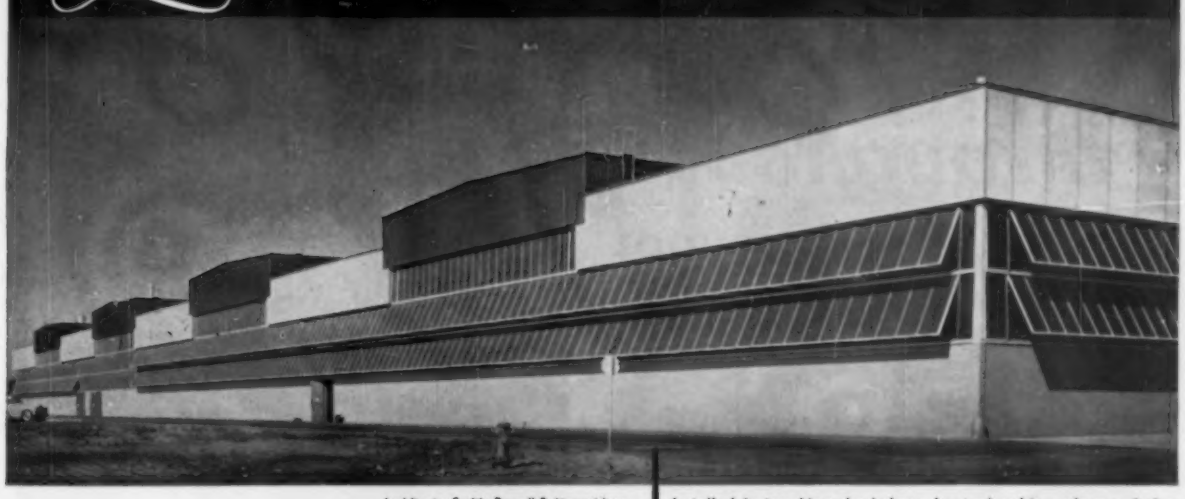
. . . Daylight GO A LONG WAY



Architects: Smith, Powell & Morgridge

Installed in top hinged windows, heat absorbing, glare reducing glass floods this factory with conditioned daylight. Diffusing light deep into the plant, it reduces contrasts that tend to cause costly visual errors, absorbs up to 50% of solar heat rays to keep interiors more comfortable. Employees see better, feel better, work better.

The property of light diffusion in figured glass is one of the most useful tools available to the architect and engineer. By its means rooms can be adequately daylighted far from windows, small skylight areas can cover a large expanse of floor with shadowless daylight, privacy can be secured, light can be controlled. Achieve better daylighting with translucent, light diffusing glass by Mississippi. Available through leading distributors in a wide variety of patterns and surface finishes to meet every requirement.

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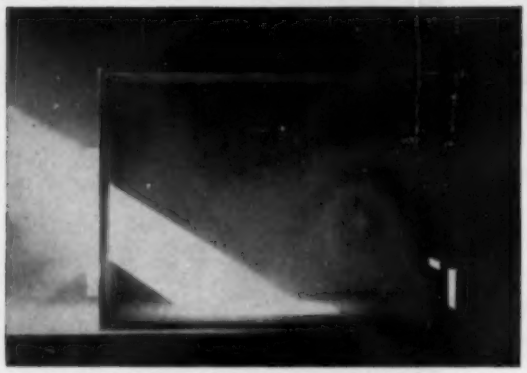
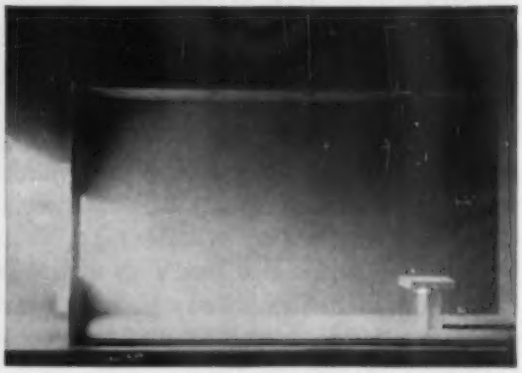
Smoke Box Photos Prove Light Distribution Qualities of MISSISSIPPI GLASS



CLEAR GLASS — Actual photograph of "smoke box room" with its window glazed with clear glass. Note high concentration of light near window.



DIFFUSING GLASS — Smoke box photo — window glazed with diffusing glass. Note uniformity of lighting and its distribution to far side of room.

In these photographs the box is built to a scale of 1″ = 1′ to represent a room 12′ high, 12′ wide and 24′ deep. The "window", centered in one end, is 4′ square, 3′ above the floor.

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LaSalle Senior High School, Niagara Falls, N.Y. Sargent-Webster-Crenshaw & Folley, Syracuse, N.Y.–architects. Connon, Thiele, Betz & Connon, Niagara Falls, N.Y.–associate architects.

nearly 400 doors pivotal hung offset style . . . an achievement in modern uniformity

In keeping with the contemporary design of this outstandingly well planned high school, all of the doors have a uniform simplicity in hanging style. Regardless of the door's function or size, a suitable offset style RIXSON floor type closer or pivot set was specified. Many more RIXSON offset style closers and pivot sets are available for doors ranging from the heaviest lead lined x-ray room door to the lightest interior door. And with each, a variety of top and side jamb pivots for varying problems in construction and material.

write for details and templates of offset type closers

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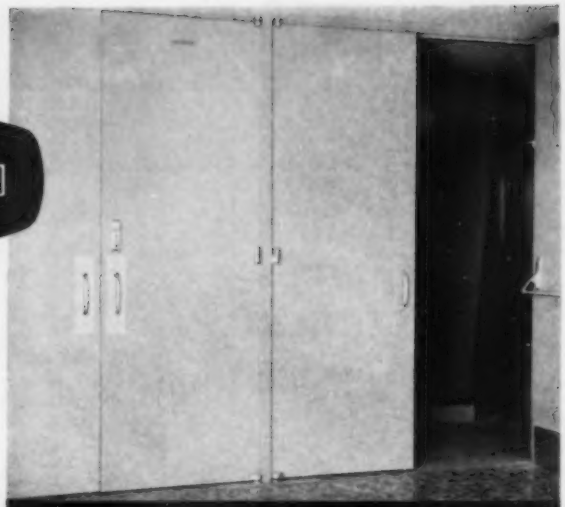

no. 25 closers for entrance, vestibule and other heavy duty doors.

UNI-CHECK closers for classroom and other active light interior doors.

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All you have to do is set the sound rating, number of ballasts to be used, the proper room constant and ambient sound level of the room on the calculator wheels and read the reaction. It's as easy as that to give yourself installations that are custom fitted to every sound requirement. When properly applied, this system will eliminate costly noise complaints.

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Gentlemen:

Please send me..... copies of Ballast Sound Rating Calculator, GEN-147, at one dollar each. Enclosed is my check for .....

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Street.....

City..... **State**.....

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Architect—Maguolo & Quick

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11

p/a views

(Continued from page 206)

8 Structural Steel and Steel Joists
9 Masonry: Brick, Clay Tile, Concrete Block, Gypsum Block, Glass Block
10 Stonework: Natural Stone (Limestone, Granite, Exterior Marble, Ledge Stone) and Artificial (Cast) Stone.
11 Architectural Terra Cotta
12 Waterproofing and Dampproofing
13 Miscellaneous Metal Work
14 Rough Carpentry
15 Roof Decks: Metal, Precast, Poured
16 Roofing: Built-Up, Shingles, Tile, Slate
17 Sheet Metal Work
18 Skylights and Ventilators
19 Metal Windows and Screens
20 Metal Doors, Frames, and Trim
21 Porcelain Enamel and Wall Panels
22 Architectural and Ornamental Metal
23 Glass, Glazing, Aluminum Entrances, and Store Fronts
24 Asbestos-Cement Roofing and Siding
25 Calking and Weatherstripping
26 Furring, Lathing, and Plastering
27 Tile Work: Ceramic, Quarry, Plastic, Metal
28 Terrazzo
29 Marble (Interior) and Slate
30 Thermal Insulation
31 Finish Carpentry and Millwork
32 Cabinetwork
33 Chalkboards and Tackboards
34 Acoustical Treatment
35 Wood Floors
36 Metal Partitions: Toilet Stalls, Office Partitions, Hospital Cubicles
37 Metal Lockers
38 Bathroom and Toilet Accessories
39 Resilient Floor Coverings
40 Painting and Decorating
41 Wall Coverings
42 Builders' Hardware
43 Special Items: Mail Chutes, Building Directories, etc.
44 Window Shades, Venetian Blinds, and Awnings
45 Plumbing
46 Fire Protection
47 Heating, Ventilating, and Air Conditioning
48 Electrical Work
49 Elevators and Dumb-Waiters
50 Moving Stairs and Moving Sidewalks
51 Pneumatic Tube Systems
52 Incinerator
53 Refrigerator Construction
54 Kitchen Equipment
55 Bakery Equipment
56 Pasteurizing Equipment
57 Laundry Equipment
58 Stage Equipment
59 Gymnasium Equipment
60 X-Ray Construction
61 X-Ray Equipment
62 Laboratory Equipment
63 Sterilizing Equipment
64 Hospital Casework
65 Banking Fixtures
66 Prison Equipment
67 Signs
68 Carpets and Draperies
69 Furniture and Furnishings
70 Culverts and Storm Drains
71 Exterior Utilities Systems: Sewers, Water Lines, Gas Lines, Electric Distribution System
72 Paving: Asphalt, Concrete, Gravel, Walks, Curbs, and Gutters
73 Railroads
74 Landscaping
75 Fences

TERRELL R. HARPER, Chairman
Subcommittee on General Conditions
Dallas Chapter, CSI
Dallas, Tex.

•

Dear Editor: I have read with much interest "Standardization of Specifications Trade Sections" by Harold J. Rosen as well as the letter of John W. Foster to which he refers. Uniformity in the arrangement of the specifications is highly desirable and if it is possible to arrive at a standardized listing of trade sections applicable to all conditions I would strongly favor its adoption by all

(Continued on page 216)

SHOWN: Quartered Benge Weldwood Paneling, Occidental Life Insurance Company, Raleigh, N. C. Architects: Kemp, Bunch and Jackson, Jacksonville, Fla.

Now—Weldwood offers you 3 ways to get the beauty of real wood paneling

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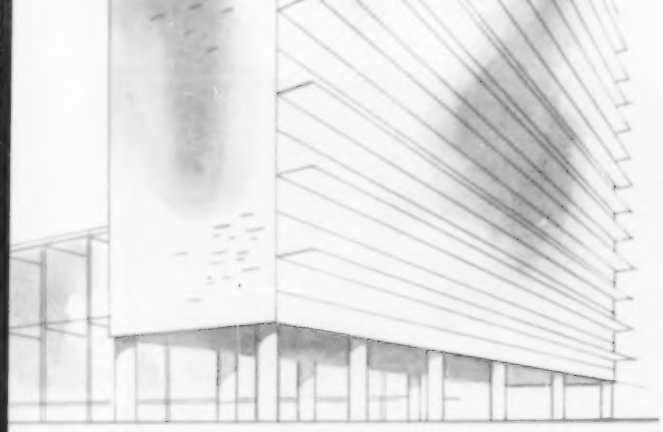

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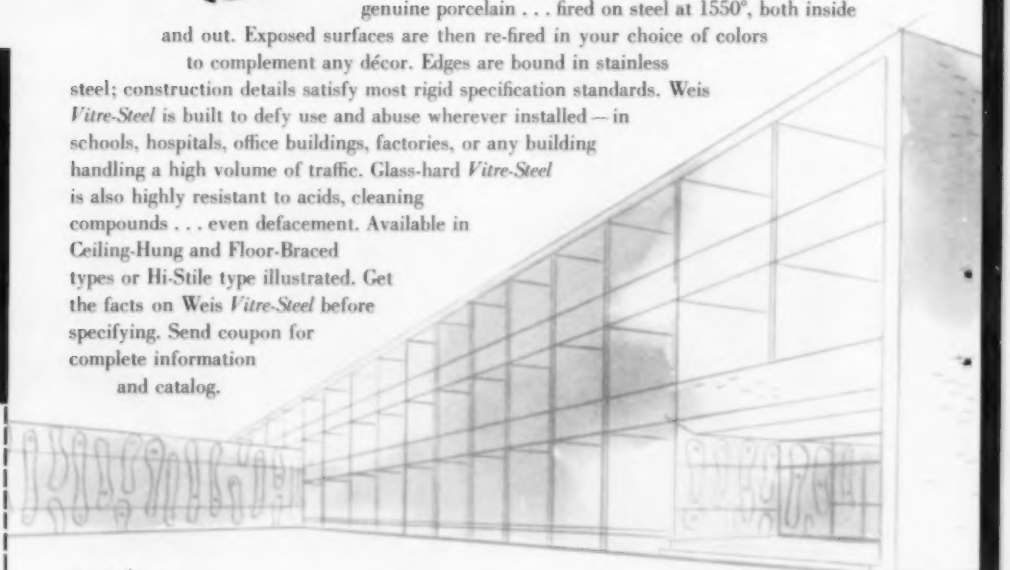

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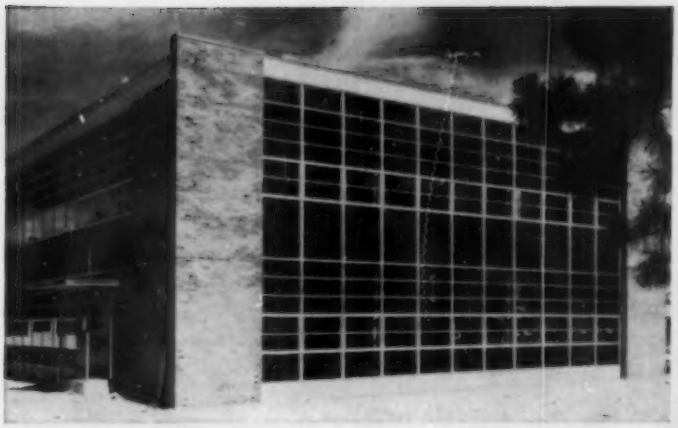

Two views of AMERICAN LUSTRAGRAY windows in St. Petersburg Junior College, St. Petersburg, Fla. Architects create an attractive appearance by combining gray sheet glass with blue spandrels. **Architects:** *C. Dale Dykema & Associates, St. Petersburg.* **General Contractor:** *Corfar Construction Co.* **Glazier:** *St. Petersburg Glass & Mfg. Co.*

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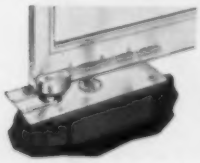

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p/a views

(Continued from page 212)

architects. There are many factors, however, which will make this difficult to achieve.

Any standardized listing of trade sections must be extensive enough to cover all conditions without becoming too voluminous for use in the typical job. Rosen's suggested list, for example, contains no provision for a section on "Radial Brick Chimney," yet when one is required it should not be "lumped in" with other general masonry, since it is almost always a separate subcontract.

The suggestion that each section be assigned a permanent number and a blank page inserted in the specifications for each section omitted does *not* seem a feasible one. There are at least 150 separate trades or specialties which, when they are to be included in a complex building project, should be made the subject of a separate section of specifications. The typical job of the average-size architectural office, however, will require only about 30 of these. Thus most specifications would carry the excess bulk of 120 blank pages.

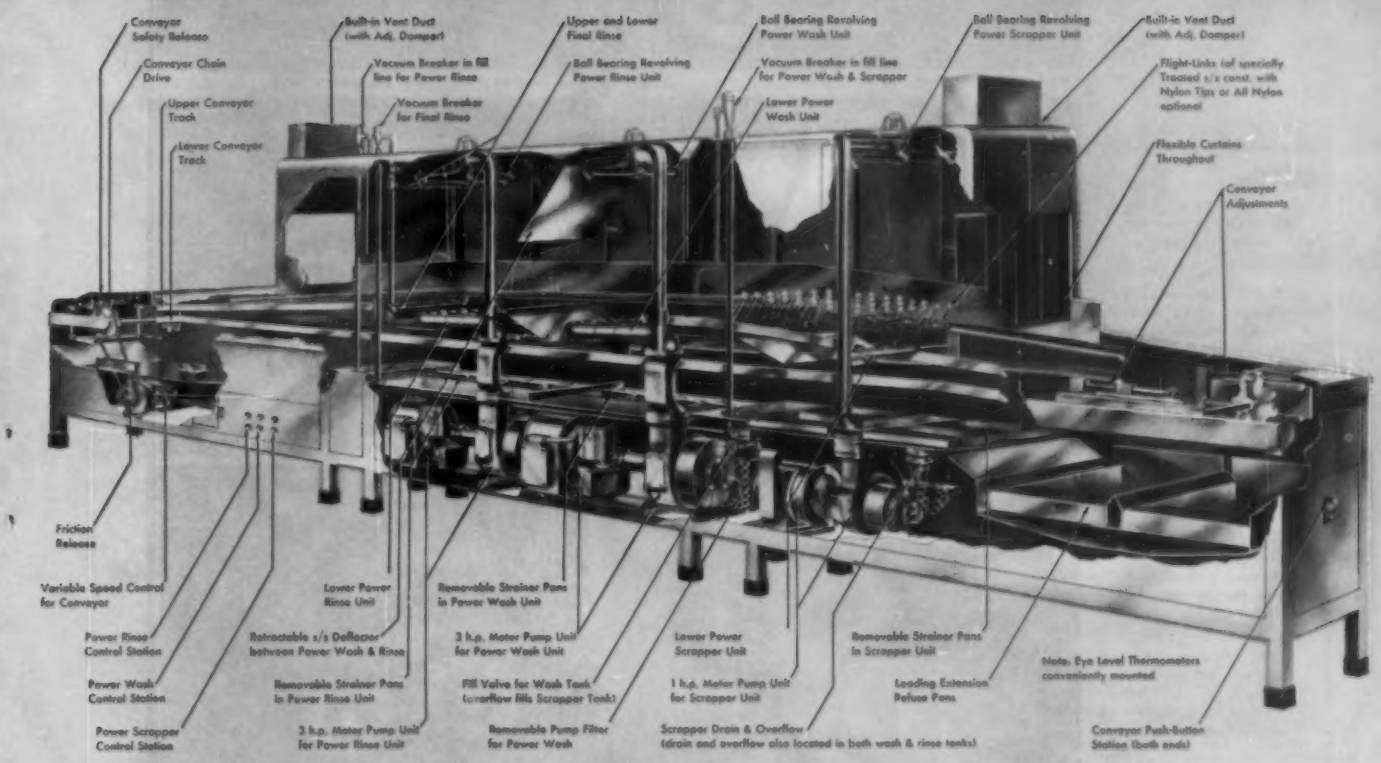
Contractor's estimators tell us that it is better to have too many trade sections rather than too few. Much confusion can be eliminated in the preparation of a bid estimate if each trade or specialty is treated as a separate section. It is easy for the estimator to compare and select from sub-bidders' quotations if they are itemized by specification section headings that are limited in scope, but extremely difficult if based on "catch-all" sections with some sub-bidders excluding one or more portions of the work.

I have recently spent considerable time in developing a check list of as many trade section headings as possible. I have made use of many published lists of section headings as well as specifications from our own office files. Among the references found valuable were the following:

Specifications, by H. Griffith Ed-

(Continued on page 220)

why your kitchen layouts work with Hobart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Conveyor Chain Drive
Upper Conveyor Track
Lower Conveyor Track
Built-in Vent Duct (with Adj. Damper)
Vacuum Breaker in fill line for Power Rinse
Vacuum Breaker for Final Rinse
Upper and Lower Final Rinse
Ball Bearing Revolving Power Rinse Unit
Ball Bearing Revolving Power Wash Unit
Vacuum Breaker in fill line for Power Wash & Scrapper
Lower Power Wash Unit
Ball Bearing Revolving Power Scrapper Unit
Built-in Vent Duct (with Adj. Damper)
Flight-Links (of specially Treated s/s const. with Nylon Tips or All Nylon optional
Flexible Curtains Throughout
Conveyor Adjustments
Friction Release
Variable Speed Control for Conveyor
Power Rinse Control Station
Power Wash Control Station
Power Scrapper Control Station
Lower Power Rinse Unit
Retractable s/s Deflector between Power Wash & Rinse
Removable Strainer Pans in Power Rinse Unit
3 h.p. Motor Pump Unit for Power Rinse Unit
Removable Strainer Pans in Power Wash Unit
3 h.p. Motor Pump Unit for Power Wash Unit
Fill Valve for Wash Tank (overflow fills Scrapper Tank)
Removable Pump Filter for Power Wash
Lower Power Scrapper Unit
1 h.p. Motor Pump Unit for Scrapper Unit
Scrapper Drain & Overflow (drain and overflow also located in both wash & rinse tanks)
Removable Strainer Pans in Scrapper Unit
Loading Extension
Refuse Pans
Note: Eye Level Thermometers conveniently mounted
Conveyor Push-Button Station (both ends)

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Left—Wiley house, New Canaan, Conn. Philip C. Johnson, Architect. Photo by Ezra Stoller, N. Y.

Right—Storage area in a Chicago factory building, floored 90 years ago in Northern Hard Maple.

"Modern as tomorrow" for the home.

"Tougher than traffic" after 90 years!

Left—Multi-purpose gymnasium, Chambersburg, Pa., Senior High School, designed to serve six school districts. Lawrie and Green, Architects.

Right—Lounge room, Country Club, Raleigh, N. C., Maple-floored throughout. Architect, Wm. Henley Deitrick, Inc.

90-to-1 favorite among nation's coaches.

Best of floors for finest of clubs.

Left—Spinning Room, Greenwood Textile Mills, Greenwood, S. C., Floor, Northern Hard Maple.

Right—Langendorf United Bakeries, Inc., Seattle, Wash. Ultra-modern throughout—and maple-floored, naturally!

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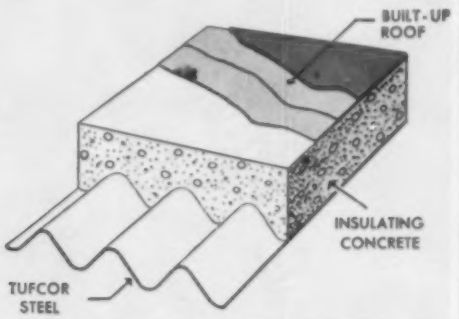

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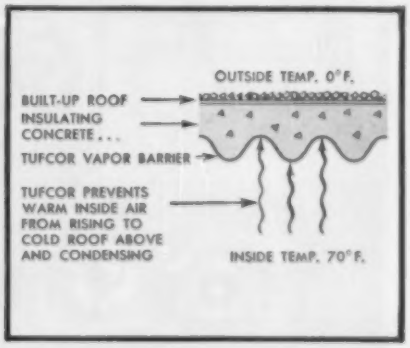
OUTSIDE TEMP. 0° F.
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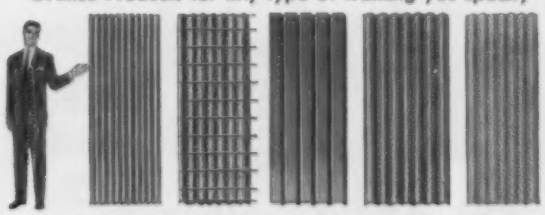


p/a views

(Continued from page 216)

wards, *Specification Work Sheets*, by Ben Dyer, *Streamlined Specifications Standards*, by Ben John Small.

Also, an article by Emil M. Pollak, President, Non-Ferrous Division, National Association of Architectural Metal Manufacturers, appearing in the January 1957 issue of *Architectural Metals*, which suggested a grouping of metal work sections in the specifications. I would be interested in having Rosen's comments in regard to this check list, a copy of which is appended.

Headings are grouped into 19 principal divisions designated by capital letters, A thru S. The first 16 of these will generally serve as a list of the sections required for a small job such as a residence or small commercial building. Each of the 19 divisions comprises from one to 28 related section headings designated by numerals. Many of the numbered sections are further subdivided into from two to ten headings, designated by lower case letters. These may become separate sections on large jobs when required. By using this check list, an outline of section headings required for specifications of the job of any size can be rapidly prepared without a great deal of reshuffling to preserve a logical sequence of related trades.

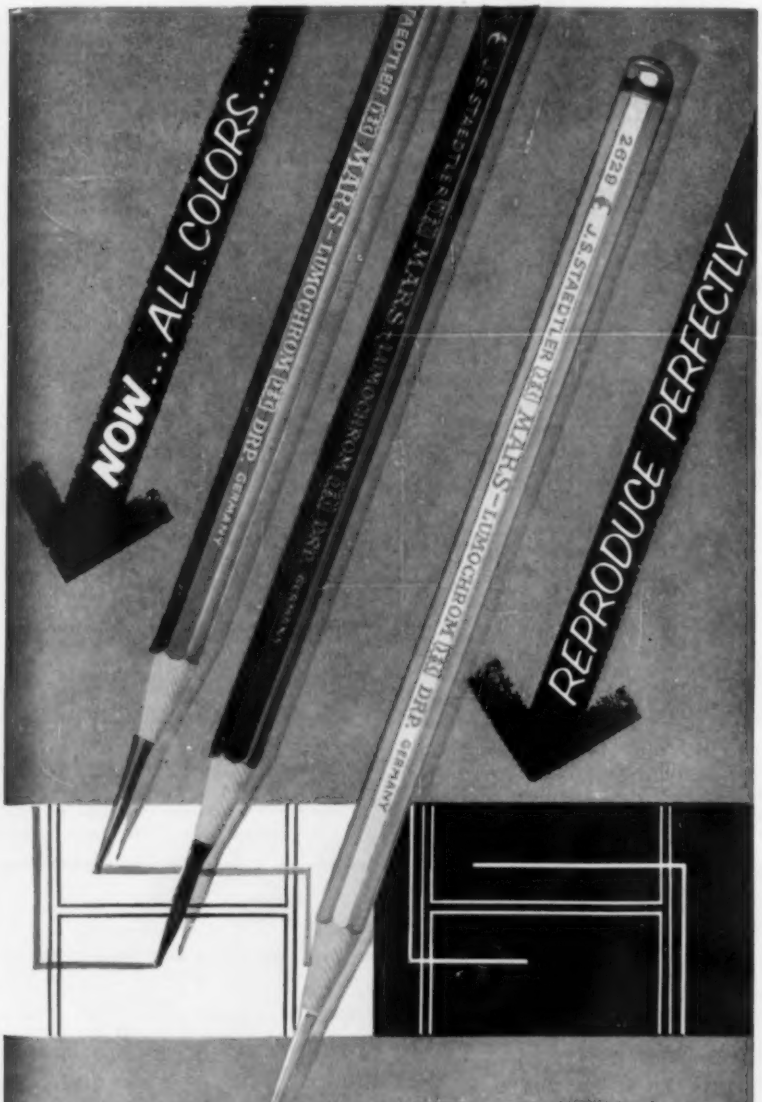
It is hoped that the Construction Specifications Institute can come up with suggestions for a reasonable standardization of section headings. Should this be accomplished, it should then be followed up with a uniform outline of the paragraph headings of the subject matter in each section.

•

A
Contractual
1. General Conditions
   a. Special Conditions
   b. Schedule of Drawings
   c. Alternates
   d. Demolition

B
Earth-Work
1. Earth Work
   a. Clearing, Grubbing
   b. Excavation, Backfilling, Grading

(Continued on page 224)



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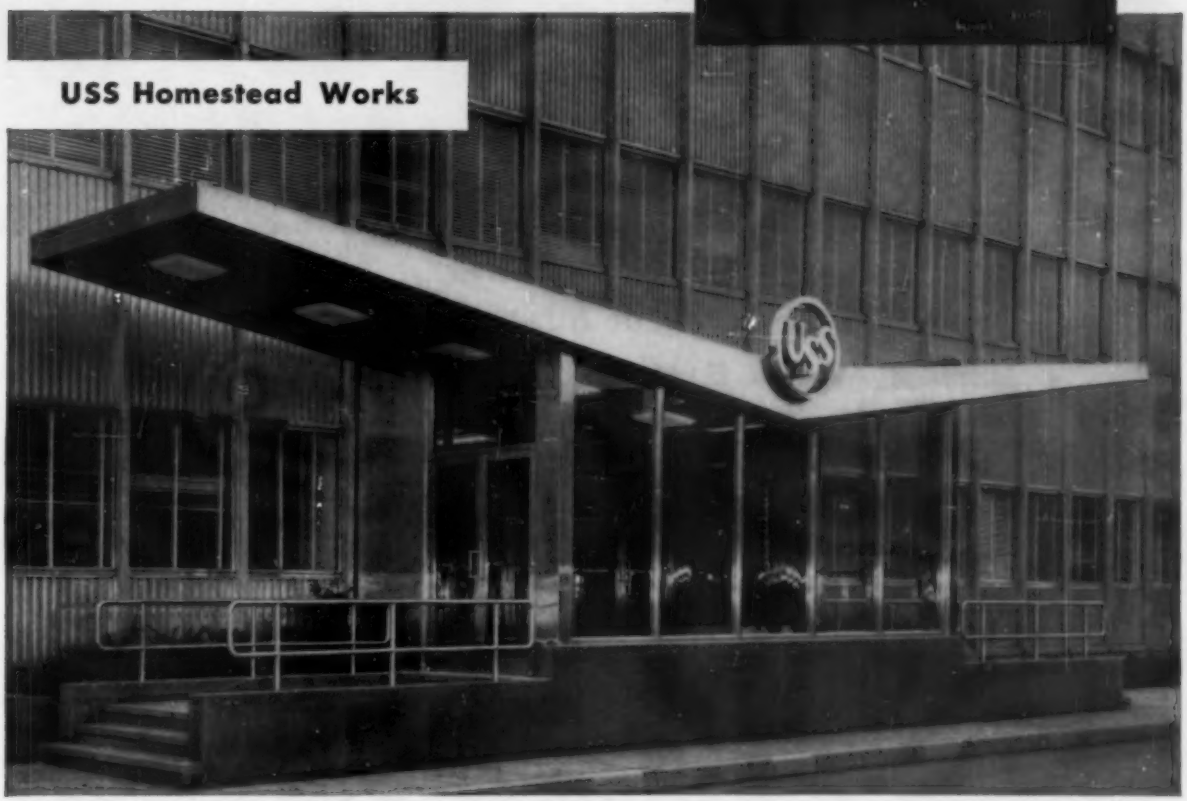
USS Homestead Works



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CHILDS & PAULSEN
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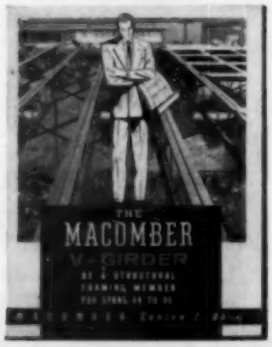

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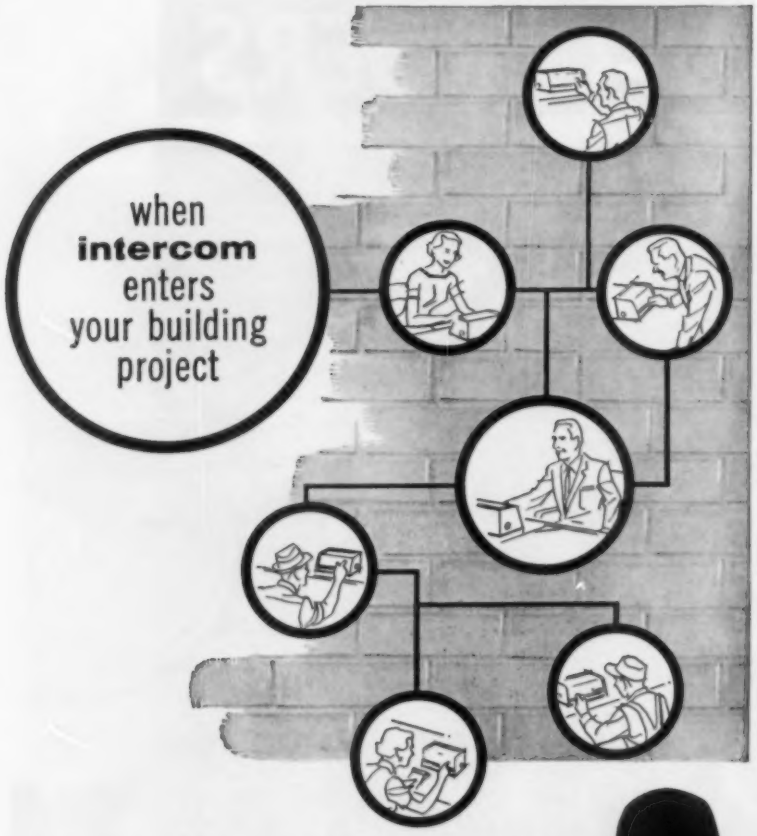

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p/a views

(Continued from page 220)

C
Concrete
1. Structural Concrete
   a. Pile Foundation
   b. Caissons
2. Concrete Floors

D
Masonry
1. Masonry Work
   a. Mortar Materials, Mortar Mixing
   b. Brickwork
   c. Radial Brick Chimney
   d. Structural Clay Tile
   e. Concrete Unit Masonry
   f. Structural Facing Tile
   g. Glass Block
   h. Gypsum Block
2. Exterior Stone
   a. Limestone, Granite
   b. Marble
   c. Cast Stone
   d. Terra Cotta

E
Waterproofing
1. Waterproofing, Tile Drains
   a. Exterior Dampproofing
   b. Interior Dampproofing

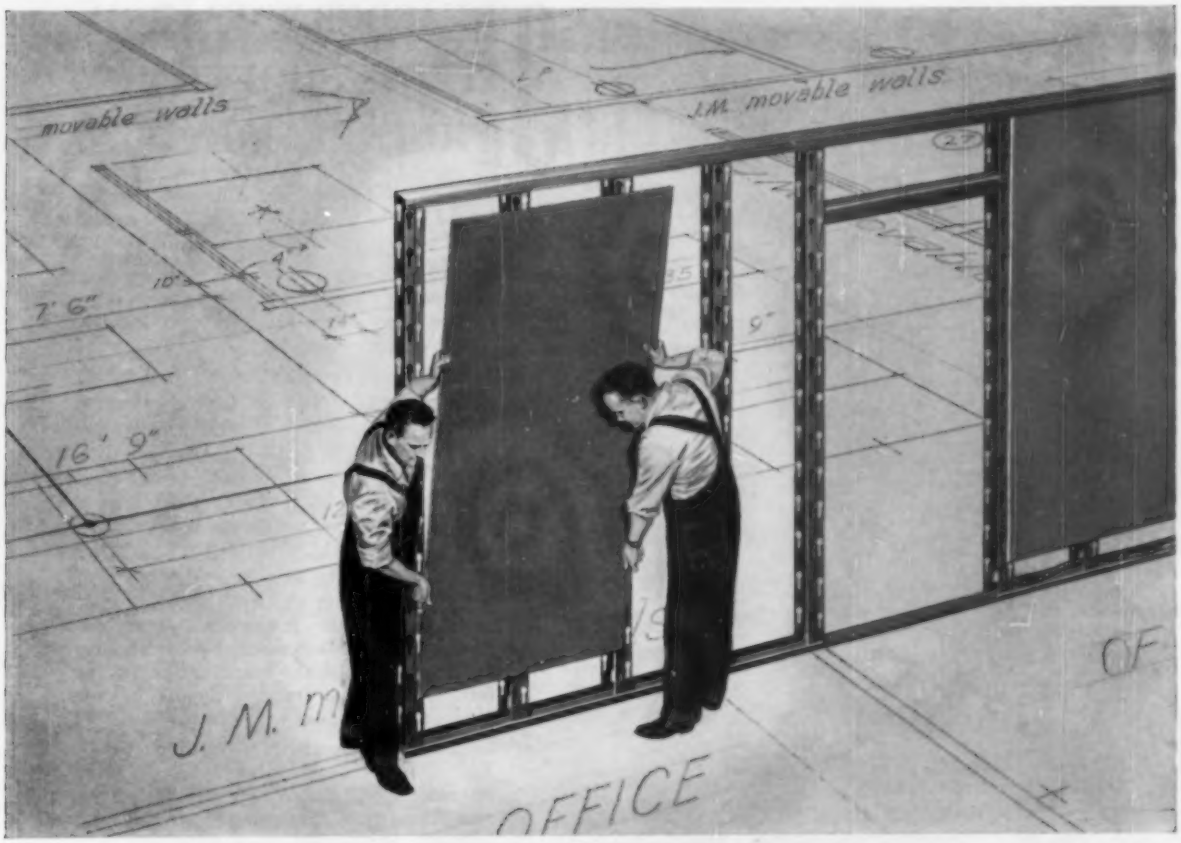
F
Structural
1. Structural Steel
   a. Steel Joists
   b. Cellular-Steel Sub-Floors
2. Wood Structural Members
   a. Glued-Laminated-Wood Structural Members
   b. Wood Trusses
3. Roof Decks
   a. Steel Roof Decks
   b. Structural Wood Decking
   c. Pre-Cast Concrete Decks
   d. Gypsum Roof Decks

G
Roofing, Siding, Sheet Metal
1. Roofing
   a. Built-Up Roofing
   b. Shingles
   c. Slate Roofing
   d. Tile Roofing
2. Siding
   a. Cement-Asbestos Roofing, Siding
   b. Corrugated-Metal Roofing, Siding
3. Sheet Metal Work
   a. Skylights

H
Metalwork
1. Miscellaneous Metal
   a. Metal Stairs
   b. Fire Escapes
2. Architectural Metalwork
   a. Nonferrous Products
   b. Entrances
   c. Store Fronts
   d. Metal Signs, Letters
   e. Flagpoles
   f. Mail Chute
3. Metal Doors, Frames, Trim
   a. Metal Frames, Trim
   b. Hollow-Metal Doors
   c. Industrial Steel Doors
   d. Fire Doors
   e. Steel Rolling Doors
   f. Overhead Doors
   g. Vault Doors
   h. Hangar Doors
   i. Aluminum Doors
   j. Bronze Doors
4. Metal Partitions
   a. Metal Toilet Compartments
   b. Metal Office Partitions
   c. Industrial Steel Partitions
   d. Wire Work
5. Metal Windows
   a. Steel Windows
   b. Aluminum Windows
6. Metal Curtain Walls
   a. Porcelain Enamel
7. Metal Specialties

I
Carpentry, Hardware
1. Carpentry, Millwork
   a. Rough Carpentry
   b. Finish Carpentry
   c. Millwork
   d. Insect Screens
2. Builders Hardware
   a. Rough Hardware
   b. Finish Hardware

(Continued on page 228)



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p/a views

(Continued from page 224)

J
Plaster, Stucco, Wallboard
1. Lathing, Plastering
   a. Furring, Lathing
   b. Plastering
   c. Stucco
2. Wallboard
3. Acoustical Treatment

K
Tile, Marble, Slate
1. Ceramic Tile
2. Interior Marble, Stone
3. Terrazzo
4. Toilet-Room Accessories

L
Flooring
1. Resilient Flooring
   a. Asphalt Tile
   b. Linoleum
   c. Rubber Flooring
   d. Cork Tile
   e. Vinyl-Asbestos Tile
   f. Vinyl Flooring
2. Wood Flooring—Laid In Mastic

M
Glazing, Caulking, Insulation, Weatherstripping
1. Glass, Glazing
   a. Structural Glass
2. Calking
3. Insulation
4. Weatherstripping

N
Painting, Finishing
1. Painting
2. Fabric Wall Covering
3. Sprayed-Plastic Wall Covering
4. Interior-Finish Schedule

O
Mechanical
1. Plumbing
   a. Gas Fitting
   b. Sprinkler System
   c. Compressed Air System
   d. Piped-Oxygen System
   e. Vacuum System
   f. Outside Utilities
2. Heating, Ventilating
3. Air Conditioning
4. Refrigeration

P
Electrical
1. Electrical Work, Lighting Fixtures
   a. Telephone System
   b. Nurses'-Call System
   c. Doctors'-Paging System
   d. Public-Address System
   e. Fire-Alarm System
   f. Fire-Detection System
   g. Luminous Ceilings
   h. Outside Electrical Distribution

Q
Special Equipment
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2. Hospital Casework
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5. X-Ray Equipment
6. X-Ray Protection
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(Continued on page 230)

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p/a views

(Continued from page 228)

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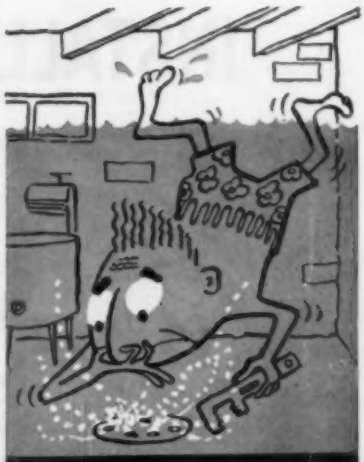
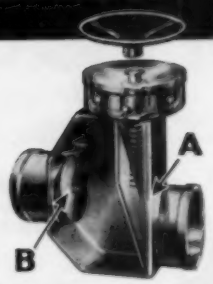
ARTHUR P. MCARTHUR, appointed General Sales Manager, Architectural Division, Northern California, and ADDISON HAWLEY, JR., new Assistant General Manager, Architectural Division, of GLADDING, MCBEAN & CO., Los Angeles, Calif., by VERNE W. BOGET, Vice-President and General Manager. MCARTHUR directs sales of ceramic veneer, glazed structural units, roof tile, facebrick, Hermosa glazed floor and wall tile. HAWLEY is responsible for the manufacture of tile products and the sale and distribution of tile and masonry products.

WILLIAM A. MCKENZIE, Chief Engineer, and ROBERT J. SIEDL, Laboratory Director, both newly named to Central Research Group; DON A. PROUDFOOT, appointed Marketing Director of SIMPSON TIMBER COMPANY Central Research Department, Seattle, Wash., by C. H. KREIENBAUM, Vice-President of the firm and head of the Central Research Department; and DONALD K. MEISSNER, appointed Acoustical Sales Manager of SIMP-

(Continued on page 234)



HOW TO PREVENT BACKWATER FLOODING



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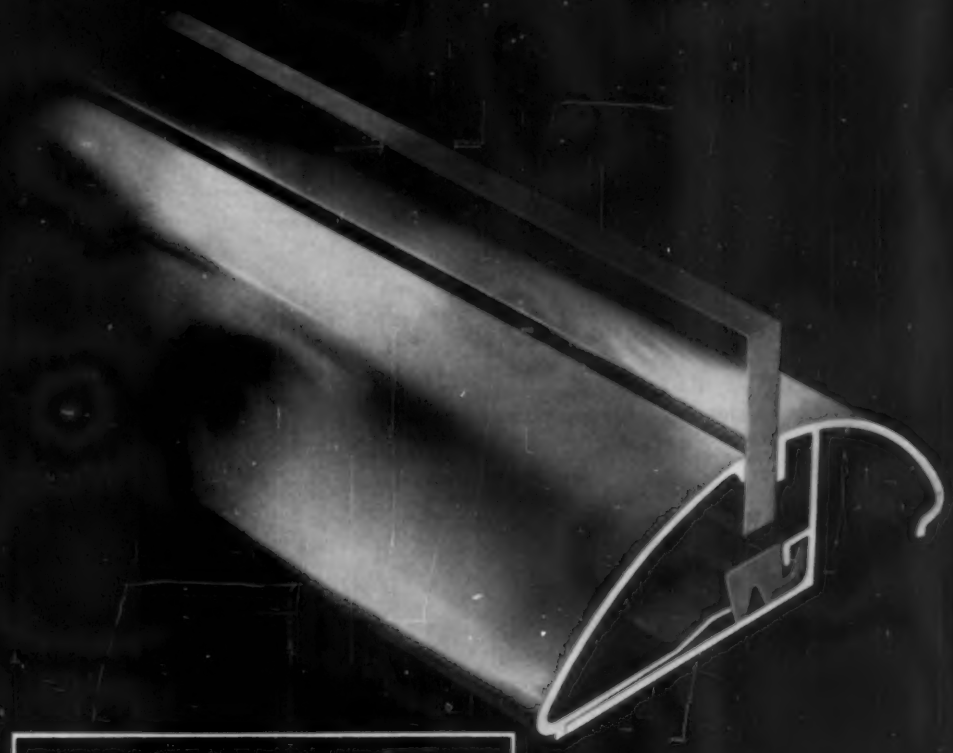

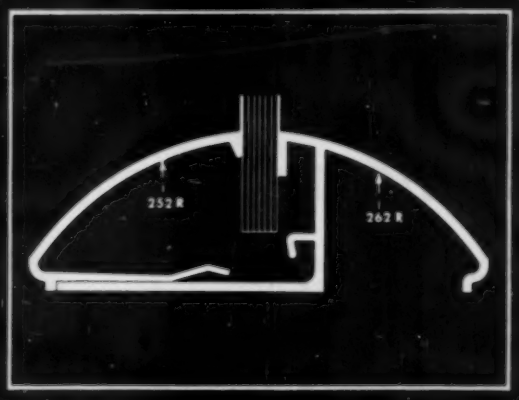

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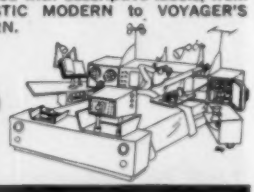

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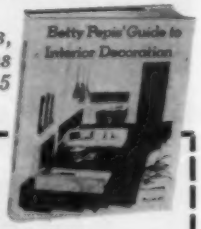

BACK OF IT ALL is the contemporary clutter of assorted decoration now appearing in mid-century rooms.

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Sprayolite adds smart visual appearance to classrooms, library and corridors in Eastwood Junior High. It goes on fast over ceiling contours, leaves no joinings and doesn't require additional finishing or painting. The sound-absorbing surface of Superwhite Sprayolite has a .55 NRC rating, a 69% light-reflection rating.

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notices

(Continued from page 230)

SON LOGGING COMPANY at Shelton. PROUDFOOT will analyze market conditions and trends and develop merchandising policies and programs.

new acquisition

THE AMERICAN HARDWARE CORPORATION, New Britain, Conn., has acquired KWIKSET LOCKS, INC., Anaheim, Calif. Elected to Board of Directors of KWIKSET LOCKS, INC., were: EVAN J. PARKER, DAVID MUIRHEAD, MAURICE JONES, JR., WILLIAM J. ZIEGENHEIM, ROBERT J. HUTCHISON, ROY C. BOLT, ROBERT E. PARRETT; officers are EVAN J. PARKER, President; WILLIAM J. ZIEGENHEIM, Vice-President and General Manager; DAVID MUIRHEAD, Vice-President and Treasurer; RICHARD F. BERRY, Vice-President and Secretary; ROBERT J. HUTCHISON, Assistant Secretary; CLELAND K. NELSON, Assistant Treasurer.

new program

KENNETH O. BATES, Executive Vice-President of ARMSTRONG CORK COMPANY, is directing program for the development of major new products and markets, announces C. J. BACKSTRAND, President. BATES directs two new staff functions—New Product Planning, responsible for keeping abreast of developments in science, materials, and manufacturing techniques that may lead to new product ideas, and New Product Co-ordination, responsible for information about major new product development projects, for assembling data to evaluate projects, and for assisting in setting priorities and timetables for those that are approved. Executives of New Product Planning are EDMUND CLAXTON, Vice-President for New Product Planning; W. F. KAUFMAN, Assistant Secretary and General Manager of New Product Planning. Chief executive of New Product Co-ordination is W. N. HARTMAN, JR., Assistant Treasurer of the firm. F. B. MENGER, new Director of Research, succeeds CLAXTON.

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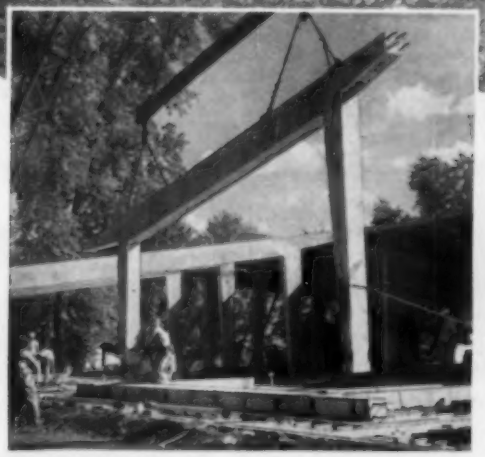

Large photo shows one wing of the Linton-Stockton School. Small photo above shows a close-up view of one of the precast concrete bents while photo below shows method of stockpiling concrete bents before erection. Designed by Thomas C. Dorste and Spiros G. Pantazi of Indianapolis. Structural engineer was Floyd E. Burroughs, also of Indianapolis.

Precast concrete members make low-cost school possible

The new Linton-Stockton Elementary School in Linton, Ind. has been widely acclaimed in educational circles. It is an example of the speed and economy with which urgently needed classrooms can be provided quickly and economically.

Saving in time and money resulted from the use of precast concrete construction. The frame is formed by precast concrete bents supporting precast channel slabs. Integral parts of the bents are arms for cantilevered sections. Both bents and roof slabs were precast on the site. Careful planning, standardization of members and utmost re-use of forms held down costs and construction time.

As a result the 80,000-sq. ft. school was built for $870,000. Its 36 classrooms, averaging 1200 sq. ft. in size, will accommodate 1,200 pupils. The restrooms and halls are floored with terrazzo, which was also used for wainscoating in the building.

Modern precast concrete schools such as this not only have low initial cost but also low maintenance cost, long life and low annual cost. And they're fire-safe, too! So make your next school precast concrete.

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(Continued on page 240)

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   b. Flexural strength in relation to weight of steel in wall.
2. Deformation
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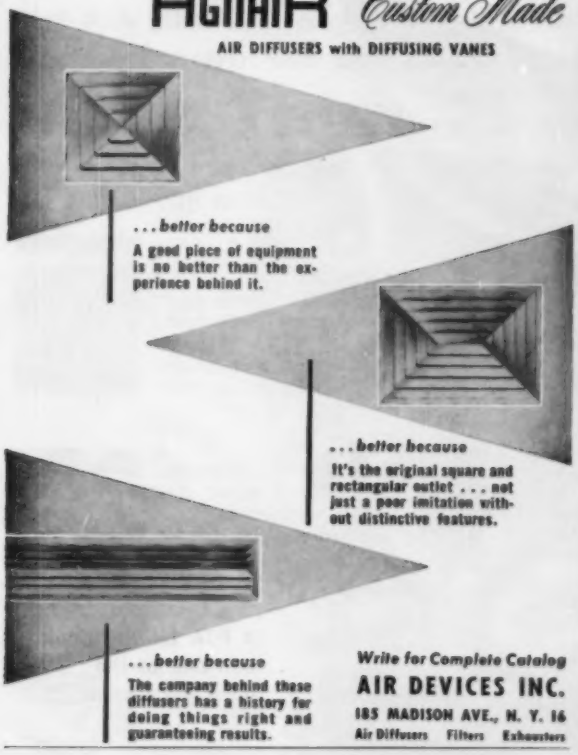

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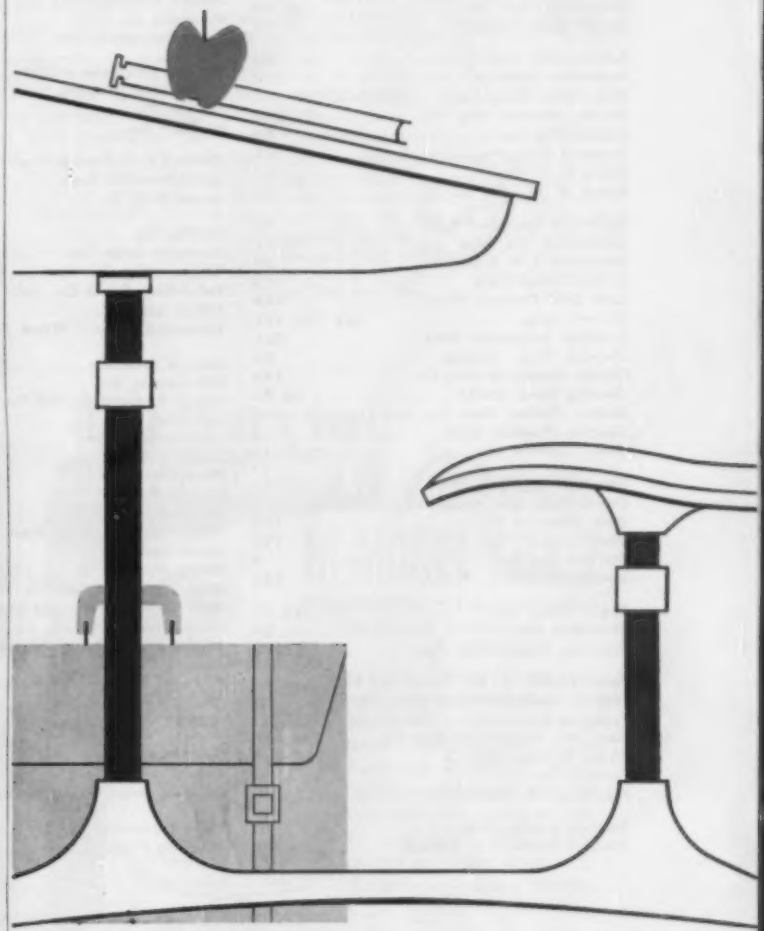

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p/a jobs and men

(Continued from page 240)

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P.S.

what moves the architect?

While the profession of architecture, through public relations, tries to be better understood by the public, it is still necessary, from time to time, to "explain" it to those much closer to its activities. For instance, the manufacturer of building products produced for contract sale does not always solve too well his problem of attracting the interest of the specifier. We are no longer in the period when obvious basic materials and equipment were specified and used in buildings, when design was simply a stylistic variation on certain conventional basic themes, when specifications were produced for a new job by a few interpolations in a previous set, when competition among manufacturers was based on selection between brands (cost, friendship, prestige), and when an architect's catalog file was easily divided into a few familiar trade categories. Today, new products push the older ones and more complicated criteria govern the selection. A producer who doesn't attempt to study this changed building-design contract market in some depth, it would seem to me, is very likely to misuse his advertising and sales promotion budget—and, which is more dangerous, to misdirect development and research activities.

Much has been written recently on the "science" of motivational research—the attempt to study underlying reasons for consumer response and then either cater to them or manipulate them. Although the architectural specifier is a consumer in a large sense, it is an indirect act of consumption—he tastes, so to speak, and perhaps predigests for the ultimate consumption. I doubt whether the psychoanalytic Dichter-type study of the architect's emotional responses and personal neurotic impulses would indicate his likely specifying tendencies. Perhaps it could be shown that one man's childhood need for comfort leads him to specify resilient rather than hard flooring, that deep-rooted conflicts are the reason for another's preference for rough textures, or that a subconscious desire to hide is the real reason for so many pierced-screen walls. But I doubt whether useful general conclusions—that might indicate a sales campaign—could be drawn from such speculations.

No, it is rather the motivation of the architectural specifier *as architect* that deserves study. Without the benefit of any research beyond the many talks I've had with professional confreres on the subject, and the continuing opportunity an editor has to know and study rather intimately the practitioners in his field, I would list those motivations in the choice of materials, products and equipment as: (1) a deep-rooted desire to be a fine designer; (2) an impelling urge to be a technical expert; (3) a basic need to contribute to social development.

These three motivations, with varying relative importance, are the reasons boys go to architectural schools. And they exist, again with varying emphasis, in the famous designer, the technical researcher, the general community practitioner and the big-business operator. Obvious? Of course; and yet how many advertisements in this issue of P/A, I wonder, are based on studies of (1) what the architect wants today for what he considers good design; (2) what technical reasons would impel him to recommend a given product to his client; (3) what valid social contribution (in price, speed, better planning, better space use, or other assists) does the product allow the architect to pass on to the community?

Any one of these three subjects would make a fascinating study "in depth" for a manufacturer. Let's mention just a few of the possible avenues to be explored:

Design. Here you would have to go beyond the superficial "let's show pictures of well designed buildings in our ads" to such questions as basic standards in architectural esthetics *vs.* fads, styles, fashions, and clichés. One material may be used because it is innately a *good* architectural material, by tradition, association, solidity, dignity, texture, color, or other timeless value-measures. (Good building stone might be an instance.) Another product might have a more topical, evanescent, fashionable appeal: it fits well with current design clichés. Should it be promoted this way? Or should an attempt be made to translate its qualities into more basic, permanent terms? Glass profited from the early solar-house design concepts; it remains today an improved *basic* design component.

And speaking of components, what would a study show about use of materials in the modular-assembly approach to design (see next month's issue of P/A) *vs.* the interest in forms and shapes, plasticity and broken surfaces (see last January's issue of P/A and, probably, next January's publication of Design Awards results)—Illinois Tech *vs.* Ronchamps; Bunshaft *vs.* Yamasaki; last year's Philip Johnson *vs.* this year's Philip Johnson? Lucky the product that can fit both concepts. They do exist, because the folded slab can be modular; Candela's umbrellas can be prefabricated; and if anyone really wanted to, he could mass-produce the finials on Paul Rudolph's Wellesley job.

Are manufacturers not interested in this approach? Well, I can remember when the curtain wall was too esoteric an idea for any but a few producers to be concerned. And never forget that the architect who "isn't interested in these abstract design matters"—the practical, feet-on-the-ground man—is really eating his heart out to be up there with (or just a few months behind) the design leaders.

Technics. The studies that need to be made in this area are obvious, and of course much research is under way. It would be interesting, however, to translate it into terms of specification motivation. It seems clear that a product cannot appeal today just because it *works* (as bricks form walls which bear loads); it must work in a calculable manner, demonstrably performing functions which can be measured (as brick manufacturers can demonstrate thermal and acoustic factors, modular adaptation, and controlled manufacture). For instance, it is no longer enough for a material to provide "insulation"; architectural specifiers will be attracted to it on the basis of comparative technical details of design and engineering results.

Obvious again? Sure! But, again, I wonder how many advertising appeals in this very issue are couched in "technical" terms so vague—so *obvious*—as to have no appeal whatsoever to today's architect.

Social purpose. I doubt whether the general public realizes at all that architects are strongly motivated by a desire to produce *more and better* socially useful structures. And the producers who want to persuade architects to specify deserve to be included in the general public if they consider this a long-hair approach. Architects want more commissions for purely business reasons, of course. But they are also interested in materials, methods, and systems which will help solve the need for more schools, better hospitals, adequate housing. To illustrate with some obvious examples: Victor Gruen is deeply concerned about downtown congestion; Chuck Goodman really worries about the low-cost house problem; Isadore Rosenfield is seriously interested in better health care; John Lyon Reid is as much involved in the problem of space for education as is any educator. And there are thousands of others, not so well known, not as often publicized, who are equally concerned with these problems.

In this area of motivation, specifications result when a producer can demonstrate (a) economic contributions, so that primary cost or speed in erection can help the designer help the community get *more* classrooms, for instance, or (b) a more productive use of space so that, as an example, a school classroom can adapt itself to changing theories of education.

Today's architectural man is not a simple person. He deserves to be understood as a designer, a technician, and a molder of the environment, with motivations as complex as they are reasonable.

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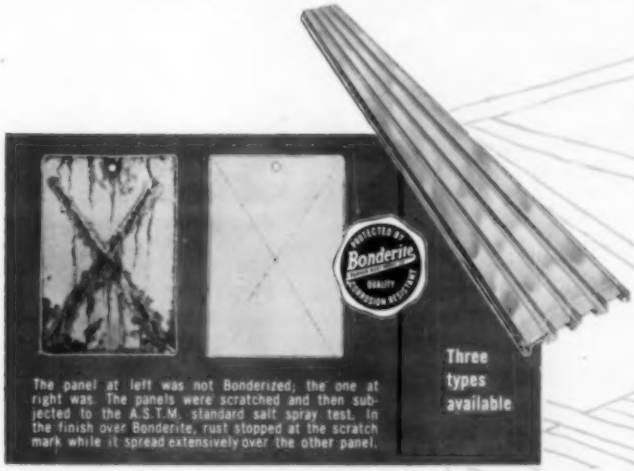

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